Textile World

VOL. 85, NO. 11—ESTABLISHED 1868

CONTENTS OCTOBER, 1935

DOUGLAS G. WOOLF
Editor

William B. Dall.....*Managing Editor*
Edwin D. Fowle.....*Associate Editor*
Winn W. Chase.....*Assistant Editor*
John Black .....*Assistant Editor*
James A. Austin...*New England Editor*
William G. Ashmore...*Southern Editor*
Paul Wooton. *Washington Correspondent*

A. P. GUMAER .....*Manager*

MANAGEMENT

No Parking! (*Editorial*) 61
The Editor Says 62
The Editor Presents, This Month and Next..... 63
Business Revival Evident Even to Chronic Pessimists..... 64
Happy Days Coming Again for Cotton Textile Industry..... 66
Japanese Efficiency in Mergers and in Output-per-Worker..... 68

MERCHANDISING

Cotton Roads Now in Five States..... 65
Fashion Futures—Fabric Trends at Winter Preview..... 67
Old Paintings Inspired Current Parisian Styles..... 71
Crush-Resist Velvets a Boon to Modest Purse..... 73
Women Can Now Be as Gay in Wool as in Other Fabrics..... 96

MATERIALS

Brazilian Cotton Could Reach Par with U. S..... 69
Soaring Silk Prices Reflect Possibility of Shortage..... 70
Germany's Staple—How Measures Up to Older Fibers..... 74
Italy's Staple—Successful Against Cotton and Wool..... 75
Desizing Agents—Factors Involving Four Enzyme Types..... 89

MILL ENGINEERING

Power Plant Performance—Boiler Room Efficiency..... 90
Coal, Steam and Drives Discussed at Gastonia..... 92
New Machinery and Processes..... 108

MEN

Allocation of Duties in a Hosiery Mill..... 72
Labor Turnover Reduced by Employment Department..... 76

METHODS

Let Finisher Know When You Switch to Mineral Oil..... 78
Cotton-Roving Twist Chart 79
Rules of Color Harmony to Improve Textile Designs..... 80
Too Much Sheen Should Be Avoided in Flat Crepes..... 82
Cut Effects in Double Cloth by 3-and-3 Interchange..... 83
Honeycomb Pile Fabric 84
Last Stretch on Road to Dress Fabric Standards..... 85
Latch Needle Design 86
Georgians and Alabamans on Slashing and Weaving..... 88
Color in Weave—26 Fancy Effects; 17 from 4/4 Twill..... 93

DEPARTMENTS

The Overseers' Corner 102
Questions and Answers 104
Personal Page 106
New Machinery and Processes 108
New Publications and Business News 111
TEXTILE WORLD Analyst 101
Quotations 126

INDUSTRY BRANCHES

Cotton Digest 112
Wool Digest 114
Rayon Digest 116
Silk Digest 118
Knitting Digest 120
Processing Digest 122
Engineering Digest 124

McGRAW-HILL PUBLISHING CO., INC.
Bragdon, Lord & Nagle Division, 330 West 42d St., New York

Bragdon, Lord & Nagle Division

Henry G. Lord.....*President*
Frank L. Nagle.....*Chairman*
James H. McGraw, Jr.....*Treasurer*

McGraw-Hill Publishing Co., Inc.

James H. McGraw.....*Chairman of Board*
Malcolm Muir .....*President*
J. H. McGraw, Jr.....*Exec. Vice-Pres.*
Henry G. Lord.....*Vice-President*
Borden R. Putnam.....*Treasurer*
Donald C. McGraw.....*Secretary*

Branch Offices:

Washington.....*National Press Building*
Boston.....*1427 Statler Bldg.*
Philadelphia.....*16 South Broad St.*
Greenville, S. C.....*312 Woodside Bldg.*
Atlanta.....*1105 Rhodes-Haverty Bldg.*
Chicago.....*520 N. Michigan Ave.*
Cleveland.....*501 Guardian Bldg.*
St. Louis.....*455 Paul Brown Building*
San Francisco.....*883 Mission St.*
London, England...*Aldwych House, W.C. 2*

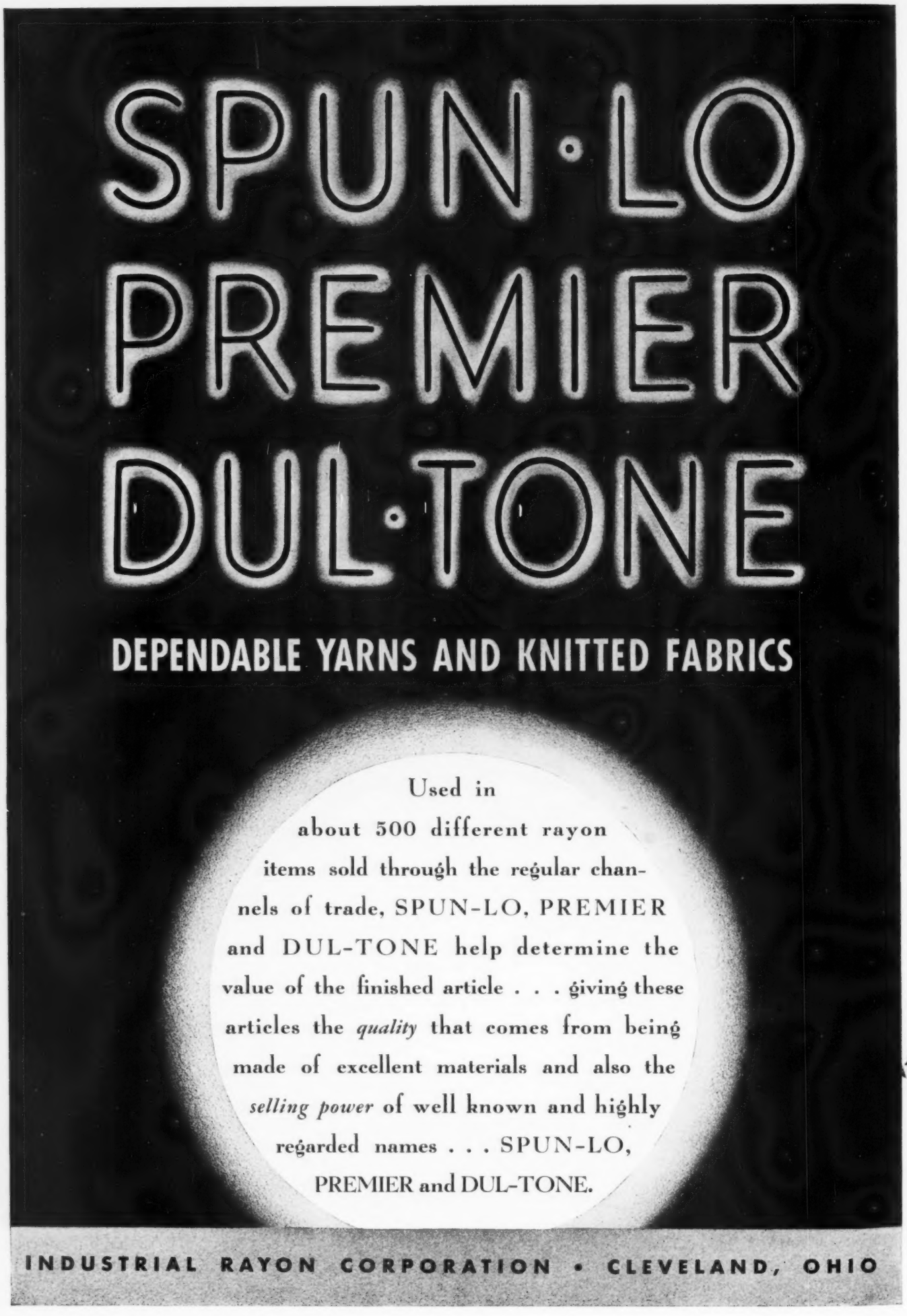
Copyright, 1935, by McGraw-Hill Publishing Co., Inc.

TEXTILE WORLD

(Formerly *Textile World Journal*) with which are combined *Textiles, Posselt's Textile Journal* and *Textile Advance News*. Published monthly, United States and Possessions, $3 per year; Canada (including Canadian duty), $3.50; all other countries, $5, U. S. currency or 20 shillings. Single copy, 35 cents, excepting special issues.

Of this issue 10,704 copies were printed.

Member of Audit Bureau of Circulations
Member of Associated Business Papers, Inc.


SPUN·LO
PREMIER
DUL·TONE
DEPENDABLE YARNS AND KNITTED FABRICS
Used in
about 500 different rayon
items sold through the regular chan-
nels of trade, SPUN-LO, PREMIER
and DUL-TONE help determine the
value of the finished article . . . giving these
articles the *quality* that comes from being
made of excellent materials and also the
selling power of well known and highly
regarded names . . . SPUN-LO,
PREMIER and DUL-TONE.
INDUSTRIAL RAYON CORPORATION • CLEVELAND, OHIO

Textile World

October, 1935

Editor: DOUGLAS G. WOOLF

NO PARKING!

WE NEED a new term. For years, industry has heard about "obsolescence" and its cure "modernization." Excellent words though they are, they do not tell the whole story. There is a combination of new equipment, new processes, new materials, new ideas, in this industry which demands a many-sided approach to management revision.

We haven't found the term we want for this approach. We think we can indicate the idea it should express—and possibly one of our readers will have a word for it.

We find an analogy in one of the phases of textile change mentioned above. New processes include, among other developments, a lot of preventive methods which make fabrics resistant to shrinking, to mildew, to moths, to creasing, and to wear. Similarly, anyone engaged in the business of manufacturing textiles today needs some process which will enable him to resist the mental lethargy which constantly threatens all of us. Under ordinary conditions, this pest is troublesome; in a state of flux, such as that which exists in textiles today, it is dangerous.

■

Let's look at the record of flux.

Within the last decade or decade and a half—and mostly within the last five or six years—these (and many other) things have happened:

Single-process picking; long-draft roving and spinning; tape condensers; oil-less throwing; rotary-traverse winders; high-speed warping; automatic warp tying-in machines; high-speed looms; new technique in carpet-weaving; large-package spinning, twisting and weaving; wrap-stripe hosiery; three-carrier, full-fashioned hosiery; square-heel seamless; quick pattern-change knitting; range-finishing; continuous washers for wool goods; high-production fulling mills; improvement in slashers—particularly for rayon; new skein-dyeing equipment; semi-automatic and automatic hosiery boarding machines; improved jigs; tremendous increase in efficiency of dryers.

■

But this list refers to equipment only—and to merely a small part of the new features in that. In addition, as noted above, there is the spectacular development of new finishes which change the character and serviceability of fabrics, open up new markets, and create new forms of intercompetition among fibers. There is the bewildering array of new materials: latex, a story in itself; new fatty-acid derivatives used as detergents, wetting agents, penetrants, etc.; synthetic resins for waterproofing and for increasing resistance to wear; new ranges of dyes. Here, again, the list is merely suggestive—and not at all complete.

Then, in the field of engineering as applied to textile manufacture, we have had such headliners as pulverized coal; high-pressure power generation; self-cleaning motors; variable-speed transmissions; diesel engines; and corrosive-resistant equipment throughout the industry.

The very omissions which any reader can point out in the above lists help to prove our point. Obviously, there is no room for lethargy—for a static mind—in an industry whose scene is so kaleidoscopic. There is no room for old machinery, old methods, old materials, old ideas. The industry is on the move; the "No Parking" sign is out in textiles.

We find that more and more textile men are realizing this every day. Some realize it via the bankruptcy route. Others get the lesson in time. The real textile problem, for each individual manufacturer, is how quickly he himself can learn it.

The Editor Says:

THE current textile situation continues to be an object-lesson in how a market ought to behave. It's a long time since the elements of strength have obtained to such a degree as at present. Although we feel it our duty to be more or less critical, there doesn't seem to be any reason for criticism just now.

We notice, however, that all observers do not share this restraint. Already, there are dire predictions that increased prices will result in lower volume. Our reaction to that is that less volume at a profit would seem to be preferable to continuing to sell at a loss. None of the textile markets is in an inflated position, nor is any approaching that state. Profits—if any—which will result from current levels will be extremely modest. It might seem a good idea to get the textile industry used to making a little money again before scaring it away from the one spell of price sanity it has developed for years.

■

There's a Difference!

THIS isn't the first time, of course, that the textile industry has tried to snap out of the depression. The plucky little lad has made several starts—two of which got front-page attention. But each time, it resembled a man trying to pull himself up by his bootstraps. It—and the other consumer goods industries, such as boots and shoes, etc.—couldn't get very far by selling their products just to themselves. While the great capital goods industries were prostrate, there wasn't a chance. So each time, textiles slumped back again.

But now the program's going to be different. The heavy industries are on the move. Witness the spectacular pick-up in machine tools: volume for first eight months of 1935 was 18% more than that for the whole year 1934! Equipment manufacturers aren't buying these gadgets for fun; they have orders on their books and more in prospect. Again, industrial construction has taken a remarkable jump since April—and all types of industries contributed to it. This means, first, business on hand; it also reflects confidence, a willingness to take money out of the sock for rehabilitation of plant and equipment in anticipation of more business ahead.

Textiles will have company in this excursion upward. And this time, the industry will go places.

■

Whither the Trade Association?

MOST trade associations have taken it on the chin since the Supreme Court expressed its opinion of NRA. This is natural. NRA brought into the associational fold many companies and individuals who had never belonged to a cooperative organization, who had never expected to belong, and who didn't think much of the whole idea anyway. Obviously, with NRA out of the way, most of this type of members would be expected to draw out. Some few would get religion, but these would be exceptions.

That's about what has happened or is happening.

We don't think the associations should get too excited about this. They just have to go back to counting on the proportion of the industry, in each case, which always has played ball. Usually, this is a large enough percentage to insure a broad-gauged approach to the industry's problems, although, of course, never large enough to insure anything like complete enforcement of an idea.

Above all, association officers should not cry over spilt milk. They should forget the glory that was theirs during those wild days in the summer of 1933—and tackle the job which is theirs, NRA or no NRA.

And in every industry that job is as urgent today as it ever has been before. The strides taken thus far out of the depression cannot be consolidated, or further progress made, without aggressive coordinated effort.

P. S.—Some people think this is the bunk. We happen to know it isn't.

■

The Export Rally

THERE was a virility about the plans for the big cotton-textile rally, scheduled for Oct. 16 in New York, that was encouraging. It reflected coordinated action on the part of all the major groups concerned. Not only did it reveal a determination to force government action on the export tolerance plan set up in the amended AAA, but—more important from the standpoint of the broad future—it showed an inclination to concentrate on all constructive methods for the stimulation and subsequent maintenance of export trade.

This branch of textile merchandising has too often been a step-child in the plans of most sellers. A few individuals, and certain organizations, have fought year in and year out for this one issue but they have not had anything like trade-wide support. Granting that the cards have been stacked against exports during recent years, that is all the more reason why every effort should be made to hold as much as possible of the ground gained in the past.

The fight for action on the export tolerance is a good one. The fight for aggressive trade action toward expansion of export trade is even a better one.

■

Out of the Dim Past

FAMILIAR terms are appearing in the textile headlines again. We read of a "delivery problem"; of "shortage"; of a "squeeze." Sweet memories of bygone days! We had almost forgotten them . . . . Why, it is even possible that some day, somewhere, some writer will refer once more to "textile barons." Then, indeed, will the industry's cup of joy be overflowing.

Textiles on the Move

For details of the improvement in textiles, see:

	Page
Outlook Story	**64**
The Silk Advance	**70**
Textile World Analyst	**101**
Digest Sections, beginning on	**112**

The Editor Presents:

This Month

You Can't Crush 'em: The velvet industry certainly is having things all its own way, these days. First came the Glamorous Age (blame it on Mae West or not as you please) and that whipped up velvet volume to a nice figure.* Now the scientists have added a magic touch of their own—and crush-resistant velvets are announced. Just before we went to press with this article the velvet manufacturers had raised their prices 10c. per yd.—so it appears the optimistic story on page 73 of this issue is not just a matter of looking through rose-colored glasses.

*This is exactly the way our market editor wrote this item. We don't know whether or not he was attempting a pun. We want it distinctly understood that we had nothing to do with it.—*Editor.*

■

Cheer Up! At least one cotton manufacturer (Jas. D. Hammett) thinks things look pretty good. He sees prosperous days ahead once more. And he has some good reasons for his optimism, which he presents on page 66.

■

Cotton Roads: Said to have been started by an unknown fisherman on Cape Cod many years ago who spread his old nets over a sandy road to make it passable, the use of a fabric membrane to hold the surface of tar roads together gained attention of highway engineers in 1924 when the first experimental stretch was laid in South Carolina. There are samples of this type of construction now in five States and all give good account of themselves. For pictures that tell the story of laying such a road, see page 65.

■

Fashion Futures: The style-forecast show held by the Fashion Group in New York last month promises to be a permanent and important American institution. Emma Lou Fetta analyzes (on page 67) fabric trends indicated by the show. . . . Also, on page 96, Minna Hall Carothers writes of its color trends, with particular reference to wool goods.

■

Travelogue: We take our readers to Japan on page 68 and to Brazil on the facing page. Two contributors tell why the first-named country can make cotton goods so cheaply, while the Brazilian story evaluates the future of cotton growing there.

■

Up She Goes! After groveling in the price basement while other textile fibers regained some of their past eminence, silk has at last started upward. What does it mean? The answer may be found on page 70.

■

Hiring & Firing: A study of central employment departments in southern mills shows labor turnover decreased considerably as a result of establishing personnel systems. (Page 76.)

■

Forty-Three: Weave designers rarely find and employ all the varied and desirable effects which can be secured by employing different arrangements of colored yarns with a single weave. Seventeen such effects from one twill are illustrated on pages 93 to 95. Twenty-six derived from fancy weaves complete the total.

■

The Right Twist, Quick: You know the hank roving you want and the cotton staple length you will use. What should the twist be? Quick! Turn to page 79.

■

When Rayon Is Cut: The Italians will take rayon absorbent "cotton" and gun-powder sacks to Ethiopia. What the Italians are doing with rayon staple on page 75; the Germans, on page 74.

■

Your Duty, Sir: In any mill the duties of executives should be clearly and efficiently allocated. A suitable assignment for the hosiery mill on page 72.

■

Too Simple: Color harmony in textile designs is obtained by following a few common-sense rules based on human reactions; pseudo-scientists will object that this system is too simple, because it calls for none of the gadgets of which they are so fond. (page 80.)

■

Bugs: In the mill "bugs" is a common term for desizing agents. Actually the enzymes are not living bodies, but are complex organic compounds. Some other misconceptions are cleared up in an article on these interesting chemical specialties. (Page 89.)

Next Month

Fall Convention Epidemic: The usual infection is on. There's the annual convention, National Association of Cotton Manufacturers, scheduled for Oct. 17 in Boston. Next, annual meeting, Cotton-Textile Institute, New York on Oct. 23. Also annual meeting, U. S. Institute for Textile Research, New York, Nov. 7. We will let you know about all of them in our next issue.

Cottons for Men: Worth Street is exceptionally busy just now getting ready for the demand expected next spring for men's cotton suitings and trouserings. Some samples will be illustrated and discussed next month.

A Modern Mill: A fine example of modernization work—in a prominent southern mill—will be the subject of an article next month.

Death from Wool: Anthrax, a disease feared by all users of Asiatic wools, has been given fresh study by American doctors. The results will be published in our November issue.

When Silks Slip: Women express themselves in no uncertain terms when threads slip at seams. The subject is being given intensive study by more than one organization, and some recent discoveries will be found in next month's issue.

Rib-Knit Designing: J. Frederick Cahill has recently offered help to designers working with jersey fabrics for both latch and spring needles. Now he turns to the assistance of the rib-fabric designer. Watch for this next month.

Last Month

Editor, TEXTILE WORLD:

I found the September issue of your publication very attractive, and the figures you give on page 93 very interesting.

Your estimate of production for 1935 for the United States of 250,000,000 lb. does not surprise me, as I believe fully that poundage will be produced.

RAYON PRODUCER

Editor, TEXTILE WORLD:

I believe you are just about right with your estimate of rayon tonnage.

ANOTHER OF THE SAME

Editor, TEXTILE WORLD:

Your comment in the September TEXTILE WORLD on the recent Cabinet Committee report is characteristically candid and, as is your habit, hits the nail on the head. While we are all thankful for the modicum of encouragement given the industry on several points, I think no one expected very much from the committee and most of us are thankful its report was no worse than it turned out to be. Your analysis is very interesting and I have no doubt that it expresses the reaction of a large section of the industry.

PRESIDENT

TEXTILE WORLD *Southern Office Moved*

The southern business office of TEXTILE WORLD was removed Oct. 1 from Greenville, S. C., to 1105 Rhodes-Haverty Bldg., Atlanta, Ga., with Ralph C. Maultsby in charge.

William G. Ashmore, southern editor of TEXTILE WORLD, will continue to make his headquarters at Greenville, his address there being 312 Woodside Building (telephone 2447).

REVIVAL

By Douglas G. Woolf

Of business now evident even to chronic pessimists

IMPROVEMENT in general business is no longer debatable. Even those dyspeptics to whom an up-swing is nothing more than the prelude to a break have been forced to admit that at least the up-swing is here. The accumulation of strength which has been going on under the surface for six months has at last made its impression upon the mass mind.

The most recent converts are, as usual, the most vociferous in professing their new faith. Extravagant claims are coming into vogue once more. 1936 will witness a wild boom, some say; increases in commodity prices will exceed the increase of the World War period, say others. . . . But we won't worry about that just yet. A little over-confidence can be endured after all these years of despair.

The current textile outlook fits in harmoniously with the general business picture. In fact, we can't resist being a bore and saying "I told you so." Modestly, we refer you to our little "prophecy" published two months ago (TEXTILE WORLD, August, 1935). The revival is not only real; it seems to be based on a sound foundation. For at least the remainder of the year, the bets are on the bright side.

These statements apply to practically all the major branches of the textile industry. The cotton goods market continues in a healthy position, with the delivery problem becoming acute on some items, particularly sheetings and sheets. Further strength is manifesting itself in an already strong wool industry. Rayon consumption continues at a high rate. The silk field is strong and active. Additional gains have been registered in hosiery, underwear and outerwear.

There is, for textiles and for business generally, one large question-mark: war in Europe. Economists in Washington, says our correspondent there, agree that it would mean a business boom in the United States; that wide fluctuations would take place on the speculative markets but that all countries, in the nervousness, would begin to stock up; and that this would create a demand which would be hard to fill. From the same source comes definite assurance that no interference is expected with the export of cotton from this country. . . . The main threat from Mars, at this juncture, is that a wild speculative up-surge might replace the sound, healthy up-swing now in progress. And that's no small threat. Witness the world history of the last 20 years!

■

AAA: For the moment, the AAA doesn't seem to be news. The little pile of clippings we have accumulated during the last month is pathetic when compared with the bushels in previous periods.

Of course, it may be the calm before the storm. A showdown is due during the present term of the Supreme Court, but just when the Hoosac Mills case will be heard is not yet certain. Other features of the AAA program are also under attack before the same tribunal. The outcome of all this may be known before the end of the year.

Meanwhile, it is not clear just how much the Supreme Court's decision will decide, our Washington office reminds us. Pending suits were filed before the act was amended. An adverse decision might not apply to procedure under the amended act; on the other hand, the court might discuss the questions involved in a broad way that would cover the new situations created by the amendments.

This much seems clear: If the court should hold that the processing tax, even as levied under the amendment, is improper, there would be no sudden abandonment of the agricultural program as was the case with NRA when the Schechter decision came down. The George amendment, authorizing the President to use relief funds for agricultural benefits, provides a cushion. There also is another cushion in the authority to use 30% of customs receipts to encourage exports.

Watch and Wait, is about all the advice we can give our customers on this score this month.

■

Post-NRA: Outstanding feature of the attempts of the textile industry to govern itself without aid of Government has been the continued observance of basic code provisions. Reports by G. H. Dorr and Arthur Besse for cotton and wool industries, respectively, show almost 100% compliance. Other branches also reveal remarkable accomplishment in maintaining wage and hour provisions.

Every little while, some dismal rumor is heard regarding "break-down" of the gentlemen's agreements. Some of these rumors are complete falsehoods; others are correct statements of isolated cases, but incorrect interpretation of those facts. The trouble is that one violation is blown up to gigantic news proportions, while at the same time one hundred instances of strict conformance will of course never be mentioned in the papers. That's a vital fact to remember, as rumors float around.

A lot of so-called news has come out of the NRA sector in Washington but it all seems unimportant. The appointment of George L. Berry as "coordinator for industrial cooperation"—an event which, in the General Johnson regime, would have sent convulsions throughout the industrial structure—made little impression on anyone except some of the NRA officials themselves who worried about what it meant to their own jobs. Thus has the glory that was NRA faded away.

■

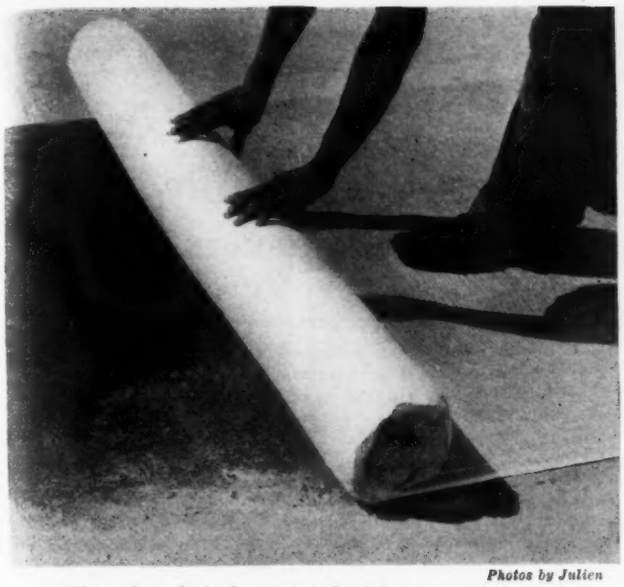
Miscellany: Japan and U. S. are reported near a "gentlemen's agreement" on Japanese textile exports to the Philippines. All that textile manufacturers know about it is what they read in the papers. . . . Competition from Japanese worsteds has started a lot of talk. Best dope is that they compete in high price range only.

Put this on your calendar: Jan. 1, 1936—first excise tax provided in security act goes into effect. On that date, employers will start paying 1% of their payroll to meet the unemployment compensation provision. This becomes 2% in 1937, and 3% thereafter. Old age pension excise tax starts 1937. But, for the New Year, the important thing to have in mind is the 1% payment due in 1936. . . . That's about all the cheery little news items we can dig up just now.

COTTON ROADS

Now in five States

ON Sept. 24 Mississippi's first "cotton road" was laid in the presence of State officials and engineers. It involves a mile stretch of the Greenville-Scott highway near Greenville, Miss., and specifications followed those sponsored by the Cotton-Textile Institute. The Institute's interest in this cotton use began over nine years ago when the first such road was laid in Newberry County, South Carolina. In the intervening years experimental roads have been built in a number of States including New Jersey (near Cranbury, in August, 1934), Texas and Georgia. The preferred fabric is a 75 to 90 in. osnaburg with 16 to 20 picks per inch. The fabric required for an 18 ft. road is said to cost about $600 per mile of road.



Photos by Julien

1. The subgrade is first treated with a prime coat of tar-oil. After this is dry, the cloth is placed directly upon it.

2. The cloth is lined by means of a string. Each roll laps the adjacent one by ¼ in. Four lanes of cloth give road width

3. Fabric is tacked to the roadbed to prevent movement before and while under treatment. A wrench is "allee-samee" hammer to this feilow.

4. The distributor comes along and lays its cargo of nice hot black asphalt over the cloth.

5. As soon as the asphalt is spread, the road is covered with stone. The truck of course is moving backward.

Happy Days

Coming again for cotton textile industry, this observer believes

By Jas. D. Hammett
Assistant-Treasurer, Chiquola Mfg. Co.
Honea Path, S. C.

THERE is a refreshing optimism about this article which we like. It is in sharp contrast to the gloom which has pervaded the cotton branch of the industry for months. Incidentally, it fits in with our own thinking. It may be only wishful thinking. We hope and believe not.

Of course, manufacturers do not need to be warned not to over-do the optimism growing out of the statistics presented in this article. The data are correct in themselves, it is true; the Association of Cotton Textile Merchants is the source. But there are other factors to be considered. For example, technical improvements have increased the potential output per unit of equipment; consequently the reduction of a certain number of such units does not necessarily mean a proportionate reduction in capacity. Also, sound as the statistical picture may be, it can be distorted by unsound human activities—particularly insofar as price policies are concerned.

In fact, this latest point is in itself the principal reason for the presentation of articles of this character. They present this challenge to manufacturers: "Here are the facts; recognize and capitalize them if you want to. It is up to you."

—Editor.

WE WHO are in close touch with the cotton textile industry are familiar with the grave problem of over-capacity that has stared us in the face for the past decade. Many of us, however, have accepted this malcondition as something that would always be with us and have never bothered to investigate just how far we have gone towards correcting the trouble.

A careful study of comparative statistics of the industry, past and present, will reveal to us just what over-capacity does exist, what correctives have been applied, and will aid us to determine what the future may hold in store for an industry that has long been depressed.

I am an optimist by nature, but I have no intention of permitting this innate optimism to impregnate my mind with false hopes. Comparative statistics reveal, however, that during the past decade much progress has been made toward alleviating the germ of over-capacity. At the same time other problems have arisen which must receive favorable attention before recovery of a substantial nature may be expected. But these new problems are not analogous to the old; while a condition of over-capacity presents a problem requiring years in which to effect a panacea, our present dilemmas could almost be corrected by the stroke of a pen.

For the sake of comparison let us take the years 1923 and 1934 as a basis; 1923 because it was in that year that the American textile industry had its greatest number of spindles in operation; 1934 because for that year we have the most recent comprehensive figures.

During the year 1923 the United States had a total of 36,260,001 active spindles. During the following decade, because of demolition and depressed business, those spindles dwindled by over 750,000 per year and 1934 found us with a total of 27,742,462 active spindles.

During 1923 our spindles were operated a total of 99,508,281,073 spindle hours. Longer working hours than those now in effect were then customary, but double-shift operations had not reached their zenith. By 1934 our spindle hours had declined to 75,711,412,892 hours. By this time double-shift operations were the rule, not the exception, but hours of labor had been drastically reduced from around 60 hours per week to 40 hours. This decline was also accentuated by the 80 hours per week machine limitation imposed by the NIRA, by periodical curtailment due to depressed markets, and by the general textile strike of last September.

Because of the tremendous decline in the number of active spindles and in the number of spindle hours operated, the industry in 1934 produced only 7,086,437,000 sq.yd. of cotton goods, as compared to a production in 1923 of 8,264,219,000 sq.yd., a decline in production of nearly one and a quarter billions of square yards.

During this decade the industry made great gains in improving its operating technique, and in 1934 was able to produce .093 sq.yd. per spindle hour, as compared to a production in 1923 of .083 sq.yd. Modernization of methods, better equipment, closer attention to selection of cotton, and several other causes contributed to this increased productivity per spindle hour.

Let us bear in mind, then, that during the last decade the industry has seen its number of active spindles decline by 8,517,539 spindles, its spindle hours decline by 23,796,868,191 hours, its production by 1,177,782,000 sq.yd. All this while the population of its principal market, the United States, was increasing from 111,537,000 in 1923 to 126,425,000 potential customers in 1934.

Is it too much to say that the cotton textile industry is no longer fettered by excess capacity? Is it too much to say that, if the industry were now faced with the same marketing conditions as obtained in 1923, one of the greatest booms in its history would be imminent? Because of the lower capacity and intelligent control of production, stocks of goods in mill warehouses are much smaller than for comparable periods in the past. Due to uncertainty over governmental programs buyers of cotton goods have made few commitments during recent months and, consequently, the retail shelves of the nation are the barest in some time. With the increased production in the steel industry and the automotive group, and with more propitious prospects for the building trades increased employment seems a certainty and this will further augment retail sales which already are acting quite favorably. These indications would seem to foretell a much brighter outlook for textiles this fall.

The textile industry has at last emerged from the lethargy that bound it for so long. Today greater attention is being given to styling of cotton goods, a more intelligent control of output is being practiced, and broad researches are being made in an effort to find new uses for this valuable product. The industry today can present a solid front as contrasted to the disorganized units of the past which gives it much greater cogency when it attempts to secure relief from oppressive governmental interference. It is really an age-old industry that has come to new life and I cannot help but feel that the future is going to bring us prosperous days once more.

Fashion Futures...

Keystone

A new evening silhouette created by Molyneux. The fabric is a sheer silk crepe (above)

The perfect wardrobe for the well-dressed American woman as presented by the Fashion Group, Inc. (at center)

For winter sports—black wool gabardine plus-fours and jacket by Lang. Panties and lining are of cotton gingham. (at right)

Fabric trends for fall and winter glimpsed at preview

By Emma Lou Fetta

FIVE out of seven of the costumes shown in the Fashion Group's "Perfect Wardrobe" and presented in its Fashion Futures 1935, Sept. 11, at the Hotel Astor, New York, were made of wool. Wool and silk and members of the rayon family, all in a variety of fabrics, were leaders in quantity throughout the showing of 75 fashions "most likely to meet the principles of good taste and to accord with the desires of American women" for the fall and winter seasons. Thus, no divergence from the classic usefulness of these textiles in autumn and colder months was recorded.

Throughout the parade of mannequins and the dramatic interludes, such as "The Debutante Dances," a wide range of weaves and colors was in evidence. Gold lamé was a strikingly repeated evening fabric, being shown five times in all. Although cloqué crepe was shown but twice, its new, unstitched matelassé appearance proved one of the new high notes. Crepe appeared 11 times in both daytime and evening wear; sheer crepe five times, including a new chiffon-like sheer; chiffon five times, once coin-dotted with lamé; taffeta three; velveteen once and velvet in seven costumes. Satin appeared but once (in the Greta Garbo "Anna Karenina gardenia ensemble," a selection from Hollywood designers). Of special interest was a new damask in eggshell color paraded in the "Reincarnations" scene illustrating the Florentine inspiration in current evening wear.

Predominating in "The Perfect Wardrobe," wool continued to punctuate the showing. In all, it appeared 28 times as the dominating textile in a costume. There were nine soft novelty versions of both American and European fabrication. Included were one flannel and one broadcloth. Jersey walked the runway three times; tweed, 11; gabardine, three; and in addition wool crepe, a homespun, and a knitted wool were shown.

One plain net, and one paillette-studded net made their appearances; also one multi-colored net. Lace—the standby as seasons come and go—was represented.

Cotton protruded its head into the cold months' picture as gingham panties, coat and sleeve lining, blouses and piping with the Tyrolian tobogganing, skiing, ski-train, skating, and other sports suits. Outer fabrics included were gabardine, homespun, tweed, and flannel.

Four important new colors were entitled Future Green, Future Red, Future Blue, and Future Topaz. They were shown as "key shades that will dominate each leading color-range, at the same time according their proper importance to black, brown, and gray in the march of fall and winter fashions." Two important shades came from London—mustard and rust.

Further analysis of Fashion Futures brings to light a street length, brilliant-studded dinner dress; lamé in the afternoon mode; a striking new moire lamé; a velvet dotted sheer crepe for evening; wool in Marlene Dietrich's peasant costume from "Song of Songs"; black wool crepe in a dinner dress.

An entire scene was devoted to "Indispensable Tweeds," and in their wide variety lay special interest. There was a rag rug tweed. There were sturdy tweeds, hairy, and nubby ones.

Plaids there were, versatile and gay—a black and white plaid top coat, plaid reveres and blouse in sheer, soft wool.

Crepe, lamé, taffeta, and sheer crepe were suggested for occasions "when women dress but men don't (or won't)." For "full dress" presentations included lamé, chiffon, sheer crepe, and velvet. Debutantes wore velveteen, taffetas, net, crepe, lamé, and velvet.

Japanese Efficiency

Reflected in management methods and in output per worker

◆ *These two brief articles on Japan both emphasize the efficient methods employed in cotton manufacture in that country . . . . Mr. Burgess, the author of the first, had active contacts with that country for several years. Mr. Norton is on the editorial staff of the English edition of a newspaper published there.*

Method of Management the Key

By Howard Burgess

"ONE of these days the cotton textile manufacturers of Japan are going to be quite a factor in this Far Eastern market. This will affect all countries, but especially those who have an established market in that part of the world." This statement I find in a memorandum written during my stay among these people in 1925.

From a mechanical point of view, the cotton manufacturers of Japan are practically on an equality with the manufacturers of other countries who are making the same class of merchandise; in fact, it is only on a mechanical basis that there is any similarity of conditions.

There are in Japan several corporations of outstanding merit. These corporations, for economic reasons, have mills in various parts of the country, and we are satisfied that it would be difficult to improve on their method of managing these scattered units. There is one outstanding feature in their method of management, and that is, that they have developed that *method* into a practicable business.

The managing of these widely scattered units is carried out in a businesslike manner, which is worthy of note, when one gives consideration to what others have attempted to do along these lines. We can imagine that their development of this came about through their own inexperience; or more properly, their lack of practical experience with the mechanical processes. This would naturally bring about a feeling of dependence, which in turn has brought about a coordination in the actual operation of the various units. Frequently, in other countries, the principal reason for failure of large combinations of scattered units has invariably been the same: the neglect of the actual requirements of the individual mill.

The managing of the Japanese combinations of textile units is based on the use of good sound judgment on the part of the managers in their approach to all manufacturing problems; this judgment is based on the results of mature deliberation of all obtainable facts pertaining to the problem to be considered. Here is one of the principal reasons for this definite way of approach: the board of directors, or more properly the board of managers, of these combinations is as a rule composed of individuals connected with the corporation who are actively engaged in manufacturing, at some one or more of the various mills, in some capacity or other. Their assistants, or consultants, are selected for their special accomplishments along with their own line of work; they are not removed from the positions which they fill, but their special qualifications being recognized, advantage is taken of their ability.

Thus, the carding, spinning, and weaving engineers (with us it would be overseers) showing special aptitude for their calling, will be considered as consulting engineers in their respective fields, and may be called upon to aid those in the same line in other mills, who are not meeting with the success which their superiors think is essential. This is not only cooperation, but it is coordination on a thoroughly practicable basis; and it is through this coordinated cooperation that the Japanese manufacturer has reached the degree of success he has attained in managing widely scattered units.

Efficiency a Fetish in Japan

By Howard M. Norton

EFFICIENCY, both in man and machine, has become the fetish of the Japanese cotton textile industry. Mirroring the rationalization efforts of the last year, the number of operatives employed per 1,000 looms during 1934 by members of the Japan Cotton Spinners Association fell by 2.7%, while cotton cloth production rose 7.1% over the 1933 total.

During 1934 the number of spinning operatives increased only 9.3% over that of 1933, but the number of spindles in operation increased 11.3%, and yarn production rose 12%.

Definite evidence that the Japanese industry is steadily becoming more efficient is provided in the following self-explanatory table:

Year	Bales per Worker per Month	Workers per 1,000 Spindles	Spindles per Bale per Month
1927	1.23	35.3	22.8
1928	1.33	31.8	23.7
1929	1.46	27.9	24.9
Dec., 1929	1.53	26.2	24.8
1930	1.51	23.5	28.1
Dec., 1930	1.75	21.2	26.9
1931	1.75	20.6	27.6
Dec., 1931	1.82	20.6	26.6
1932	1.85	20.1	26.9
Dec., 1932	1.92	19.6	26.5
1933	1.99	19.2	26.1
Dec., 1933	2.14	18.9	24.7
1934	2.04	18.8	25.6

One might judge from the above that Japan is turning out coarser yarns. But this is *not* the case. Comparing the production figures for the latter half of 1933 with those for the same period of 1934, production of yarn under 10s rose 11.1%; yarn between 10s and 22s rose 12.4%; yarn between 23s and 44s rose 16%; and yarn over 45s rose 23.7%. In other words, the higher the count the greater the increase, illustrating the fact that Japan is going steadily deeper into the quality field.

Brazilian Cotton

By Chester Lloyd Jones

Could reach par with U. S. as factor in world market

◆ *The author of this article has had 12 years service as commercial attaché in Spain, Cuba, France, and Mexico; has published books on Latin America; and is now at the University of Wisconsin, in charge of the courses on economic development in Latin America.*

FOR well over a hundred years the United States has been the world's greatest producer and the world's greatest exporter of the cotton fiber. For over a century also, with the exception of years during the war between the States and a few others, cotton has been the greatest of American exports. Under normal conditions we supply about 60% of all that enters world consumption and about the same proportion of that which enters international trade.

But in the current crisis years the share of American producers of cotton in the yield of the world has fallen. We now furnish only about 45% of the total consumption. Our exports, which averaged 8,513,000 bales in the five years ended July, 1929, fell to 4,797,000 bales in 1934-5.

In current discussions of this situation, competition from Brazil is assumed to be a serious factor in future world cotton markets. How serious that competition will be becomes on analysis highly problematical. So far as natural resources are concerned Brazil is exceptionally endowed for cotton production. Cotton is already produced in every one of its States from Amazonas to Rio Grande do Sul and could be grown in much greater quantities. Between 1920 and the end of 1933 the area under the crop increased 117% and the reported yield rose from 99,701 to 151,253 metric tons. The increase in the area planted in 1934 was some 45% over the previous year with a yield somewhat less markedly augmented. Ginned cotton up to July 13 amounted to 331,285 bales, or 53,100 metric tons, in 1934 and 340,862 bales, or 57,400 metric tons, in the current season. Over the period since 1920 the great State of Sao Paulo has been the largest producer, bringing in about 30% of the total.

On the other hand, while the total production has markedly gone up, there has been great variation in the crop in different districts from year to year. The States which have made the greatest increases at times during the period since 1920 have turned to cotton only when crises have confronted their main agricultural products. That is what happens in Sao Paulo, Minas, Pernambuco, and Rio when the coffee and sugar markets meet difficult circumstances. Their cotton production can be greatly increased if prices and demand are good. The States of most constant yield are those of the north coast, especially Parahyba, Rio Grande do Norte, and Ceara, where cotton is the chief agricultural reliance, though not, it appears, a crop the yield of which can be greatly increased. There great variations occur only because of causes such as deficient rain, pests, and general economic cycles.

So long as temporary influences determine the Brazilian production, the country may not be a serious competitor on world markets. When that is the case the local industry does not develop satisfactory technique in the selection of seeds, methods of harvesting, and preparing the crop for shipment. The results obtained at Brazilian experiment stations, and the statistics available for the crops of the years 1926-34 seem to indicate, however, that the yields per acre compare favorably with those in competing areas. While the character of the fiber can be greatly improved, it nevertheless finds a market in the chief textile manufacturing countries of Europe. Great Britain is the greatest buyer, taking 67.15% of the exports in 1930-33 and 56% in 1934.

Possible Brazilian production and export have little relation to current yields. As far as land regarded as suitable to the crop is concerned no country in the world is more favorably situated—not even the United States.

The chief handicaps for rapid development of cotton culture are two: the lack of an efficient transportation system and the character of the labor supply. The railroad system reaches only a small portion of the country, rates are high and service poor. The laboring population of the Northern States particularly is of low industrial ability. While this is less true in the Southern States and particularly in Sao Paulo, the leading cotton State, the number of laborers available for cotton growing is there more restricted and their wages higher. The population of the republic, however, is growing more rapidly than that of any other Latin American State, and it consists largely of the same African racial stock which has given the United States preeminence in cotton.

Given public order, which will attract capital, and a fairly efficient government, conservatives believe there is no reason why Brazil should not develop a technique in cultivation, a transportation system and a labor supply adequate to producing and marketing 8,000,000 bales per year and this without using any of the more distant lands now difficult of access. Such a result would duplicate the United States contribution to world markets.

The greatest incentive to such development, of course, would be a high price level maintained over a sufficient number of years to encourage the establishment of plantations, development of skill in raising the crop, the establishment of stations for ginning and the improvement of transportation. Nor need the period of good prices be long, as is shown by the rapid increase of Brazilian production in current years and the great rise in her imports of cotton mill machinery.

The bearing of these facts upon our current national cotton policy may still be a matter of difference of opinion. The cotton industry is admittedly in a critical condition and possibly extraordinary temporary measures to assist it may be justified, but we must keep in mind that extraordinary measures may bring extraordinary damage quite as easily as extraordinary benefits.

Those who guide our national policy will do well to give close attention to the competition in the world cotton market. We have long been the leaders in the race. We are now held back from the use of all our powers. If we are left free to show our strength we may still regain the lead we have now lost.

Soaring Silk

Prices reflect possibilities of shortage due to low cocoon crop

◆ *The following article, written by an experienced student of the raw silk market, attempts to outline the statistical position of that fiber. It covers the situation as of Oct. 1.*

A SERIOUS shortage of raw silk looms somewhat later on in the present crop year. There is enough statistical evidence to warrant this statement at the present time, even though nine months of the 1935-36 season still lie ahead.

Japanese cocoon production will show another heavy decrease this year, the fourth decline out of the last five crops. To mention underproduction of raw silk to the average manufacturer is usually good for a laugh, but an unprejudiced review of the facts and statistics points clearly to a world supply that will be inadequate to meet the current American and European demand.

The turning-point in the raw silk market came during the summer months of 1934. Prices at that time touched their all-time lows of slightly under $1 a lb. for yellow 20/22s and at $1.10 for the 78% 13/15s. The basis for the broad alteration in trend lay in the further contraction of filature production in Japan and the almost prostrate condition of the Chinese filatures in Canton and Shanghai reeling for export, a position aggravated by the artificial rise in silver prices.

During the 1934-35 crop year American and European use of silk exceeded production by about 50,000 bales. Total visible stocks on June 30, 1935, were down to 166,900 bales, as against 216,400 bales on June 30, 1934. Of these 166,900 bales, about 78,000 bales were Japanese Government holdings and off the market.

The broad picture of the 1934-35 crop year, which ended in June, was one of an excess of demand over supply, world consumption exceeding world production by about 50,000 bales. This resulted in a decrease in Japanese port stocks of about 26,000 bales, a drop in warehouse stocks in New York of 17,000 bales, and a drop of 7,000 bales in the quantity of silk in transit. Over the second half of the crop year—January through June, 1935—there was a steady tightening of the statistical position of the market which resulted in an unseasonal firmness in prices. More silk was being consumed than was being produced despite the fact that Japan was dipping deeply into reserve stocks of cocoons carried over from the previous season. Statistical evidence of this could be seen in the fact that while cocoon production was reported 13.7% lower than the previous year, the into-sight for the full year was down only 3%.

The current crop year of 1935-36 entered its first phase in July in the strongest position in years. Carry-over holdings of cocoons in Japan had been eliminated; Japanese port stocks were very low, with free silk (not including Government holdings) at only 18,000 bales; and New York warehouse stocks were none too large at 42,000 bales. Prices began to firm up as soon as the first unofficial estimates of the spring cocoon crop indicated another heavy decrease over last year's already inadequate crop. The New York technical situation was further complicated by a Canadian customs ruling which caused some 10,000 bales of silk to be rushed into Canada to escape an anticipated import duty.

It is impossible to escape the broad implications of the serious situation that may face the user of raw silk over the second half of the current crop year—January through June, 1936. The market's recognition of the potentialities of a serious shortage brought a steady rise in prices which recently resulted in a $2 level for 78% 13/15 silk against $1.35 early in July.

As silk is produced wholly in the Northern Hemisphere, the cocoons grown during the warm months of May through September rigidly limit the crop, now that the Japanese carry-over has been used up. The Chinese production of silk, which has dwindled to almost a negligible factor, may be even smaller this year. Italy, lately a minor factor, reports a still smaller crop.

The Japanese cocoon crop, which furnishes over 90% of the export silk available for American and European use, promises to be from 8% to 10% below last year's already inadequate production. The spring crop of cocoons in Japan was 8½% smaller on the final figures, while early estimates of the autumn crop indicate as much as a 20% drop. Discounting the possibilities of such a heavy decrease in the autumn crop, we still face a definitely smaller Japanese production. Last year's cocoon output was the smallest since 1926, and the current one will very likely be the smallest since 1924.

In the meantime, the consumption of silk over the first three months of the present crop year has held up well, actually exceeding last year by a convincing margin. Europe's imports have been slightly higher, while the use of silk here in the United States has shown substantial gains. Mill takings over the first three months will exceed the same months of 1934 by about 25,000 bales. The present indications are that the improving business prospects will permit a larger consumption of silk merchandise than last year and at a somewhat higher level of prices.

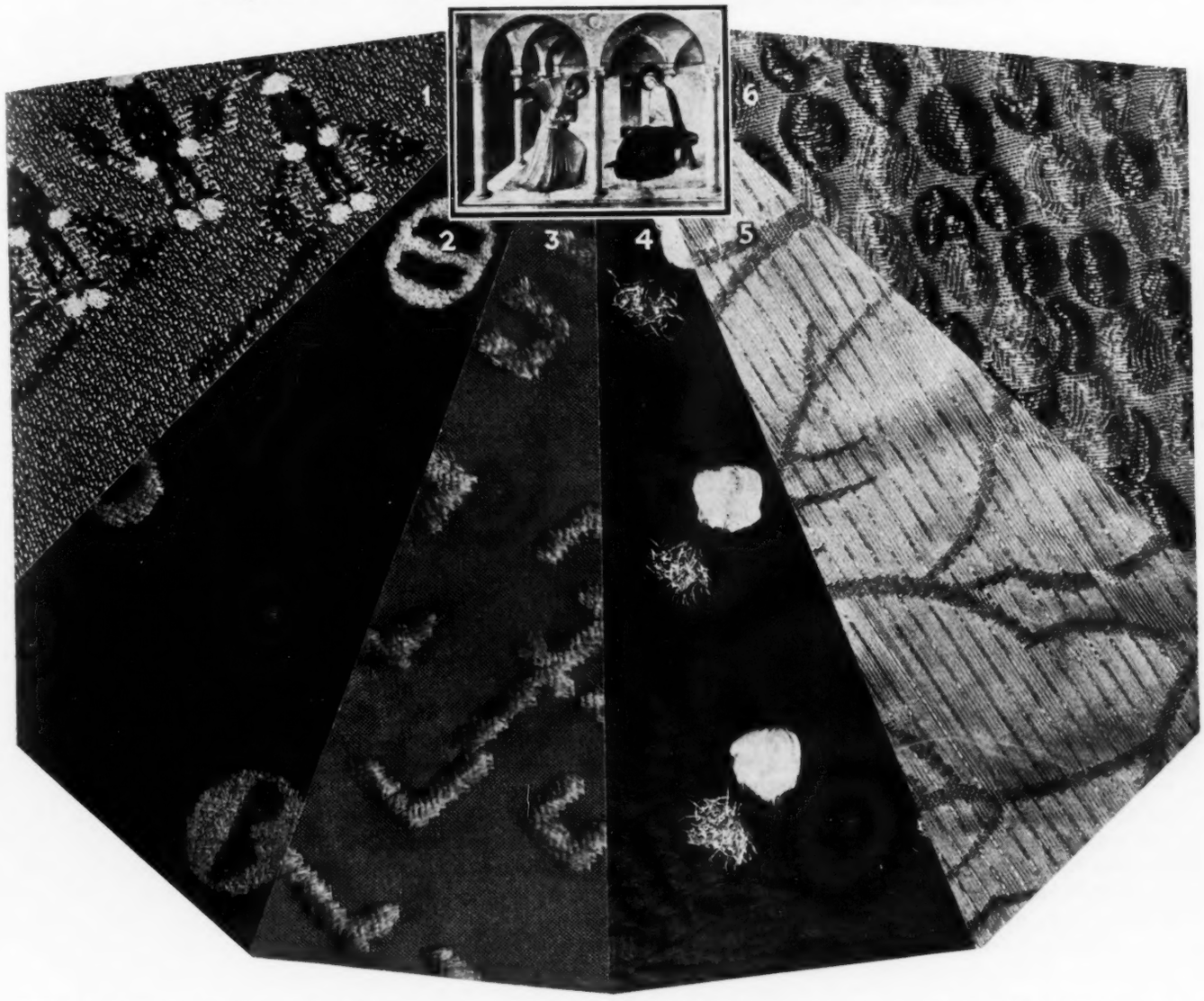
Just how to fit the foregoing statement into line with a substantial decrease in the world production of silk, is the problem that the market faces over the coming months. So far this season the problem has been obscured by the fact that the steadily rising prices have encouraged the filatures in Japan to bring an unusually large proportion of the crop into sight over the first three months. This, however, will only make the situation over the second half of the year that much more critical. Higher prices will force some decrease in Japanese domestic consumption, and in addition the visible stocks will permit a small further contraction on top of the heavy decrease noted last year. However, in the main it seems that an alignment of demand with supply will have to come about in the form of a definitely smaller American use. Since the use of silk in full-fashioned hosiery will not be curbed by $2, or even $2.50 silk, and this section of the market consumes about 60% of the year's total, it is obvious that the broadsilk end will have to turn over the field of the low-end weighted goods to competing rayon fabrics.

So far the price of raw silk has advanced some 65c. a lb. from the season's lows. It remains to be seen whether this rise has fully discounted a situation which promises to get still tighter as the season progresses.

Old Paintings

By Betty E. Hirschberg

Inspired many of the current Parisian styles



PAINTINGS of the old Italian masters have served leading couturiers as models for the style of their winter fashions, and furnished a rich source of inspiration for weavers and creators of fabrics. Silk velvets and velveteens, magnificent brocades and lamés, monotone smooth cloths or fleecy woolen materials recall in weave, coloring and drape the garments of the old patricians, Madonnas and saints in the pictures of the Renaissance. Mantle and costume materials have a pronounced boutonnée character and surface pattern, and the old familiar velvets, taffetas, matelassé, etc., appear in new and highly decorated forms.

Coudurier-Fructus-Descher shows an imaginative and rich collection of silks, velvets and lamés. Particularly charming is the idea of the "talking material patterns" intended for sports purposes. The silk figured "Sports d'Hiver" (Fig. 1) shows pictures of winter sports, ski groups, minute fir trees applied in cloqué. Still more amusing is the velvet "Signaux de la Route" (Fig. 2). On round dots of different sizes appear the international route indicators and signals on automobile roads. Condurier shows a new material "Mycaline," an improved Cellophane, as effect yarn, in velvets and other fabrics. A figured velvet on taffeta ground is Fig. 3.

As creator of a non-crushable velvet, "Sans Peur," the firm now brings out the velvet, "Sanpuerdo," which is not only crush-resistant but water repellant.

"Gypsi" is a moiré ground shot with gold and silver yarn; "Magicianne" obtains iridescent effects from colored metal. Among the lamés there are figured, cloquéd, reversible, matelasséd and taffeta lamés. "Passe-Passe" is a silk cloqué to which velvet and metal dots give a vibrant surface (Fig. 4).

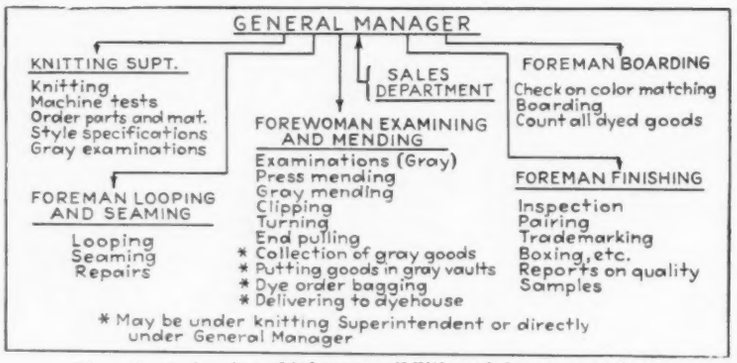
Especially attractive in the collection of Chatillon Mouly Roussel is a natural silk moiré, "Ciel de Nacre," in iridescent mother of pearl colors, and "Papegai," a moiré taffeta with woven pattern and lamé stripes (Fig. 5). "L'oiseau de feu," with double face and cloqué design, belongs to the so-called "Chameleon" taffetas. The line of velvets is complete and inspiring.. The lamés are in strong relief and cloqué, like "Flocons d'Argent" (Fig. 6), which is also produced in gold.

Allocation of Duties

In a hosiery mill should avoid overlapping of authority or responsibility

By Milton M. Abrams
Ajax Hosiery Mills

A HOSIERY mill is a business enterprise and should be operated as such. A number of manufacturers have always operated their business in such a manner that details were expected to take care of themselves, and the only thing the manufacturer concerned himself about was producing a good product. Today, with strong competition and "smart operating," this practice no longer holds. Mills which always made a good product, have changed management or shut down because they were not progressive enough in other phases of manufacturing.



Flow sheet showing chief responsibilities of department heads

Let us take, for example, a mill of 5,000 doz. weekly production. In a mill of this size various executives or supervisors are essential, and the duties of each should be clearly defined. While their duties may hinge and tie in together, care should be taken that there is no duplication of responsibility or overlapping of authority.

Duties of the knitting foreman or superintendent should be in a general way as follows: (There are numerous minor duties and details, but we shall confine ourselves to the more important ones.) (1) supervise knitting quality and related duties, such as making machine tests for stitch construction, plaiting, general knitting, styling, etc., course counting tests, and check-ups on the different machines; (2) supervise machine fixing, machine adjustments, machine repairs, and style changes; (3) order all needles, needle oils, machine parts, etc.; (4) either make up style specifications or cooperate with the engineering department on this; (5) order silk and yarns or collaborate with the order department on this; (6) supervise silk vaults and humidifying rooms; (7) supervise the distribution of legs to the toppers and footers; (8) supervise the collection of all knitted work; (9) establish and supervise enforcement of penalties for defective knitting or related workmanship; (10) supervise machine shop; and (11) supervise gray leg and foot examinations.

There should be a foreman in charge of the looping and seaming department, who if experienced and capable can also fix the machines and keep them in repair.

There should be a forewoman in charge of the gray examining and mending departments. Both the press menders and the gray menders should be under her supervision. This department should also include all related operations of gray examination on expansion forms, clipping, trimming, turning, end pulling of looping, and like operations.

The department for the collection of the gray goods after gray examining, putting the goods in gray vaults, bagging orders for the dyehouse, and delivering goods to the dyehouse may come under the supervision of either the knitting superintendent, the gray-examining forewoman, or the general manager of the mill.

If the mill has its own dyehouse, the dyer is responsible for the general conduct of this department, such as matching of shades, and ordering of dyes and chemicals, etc.

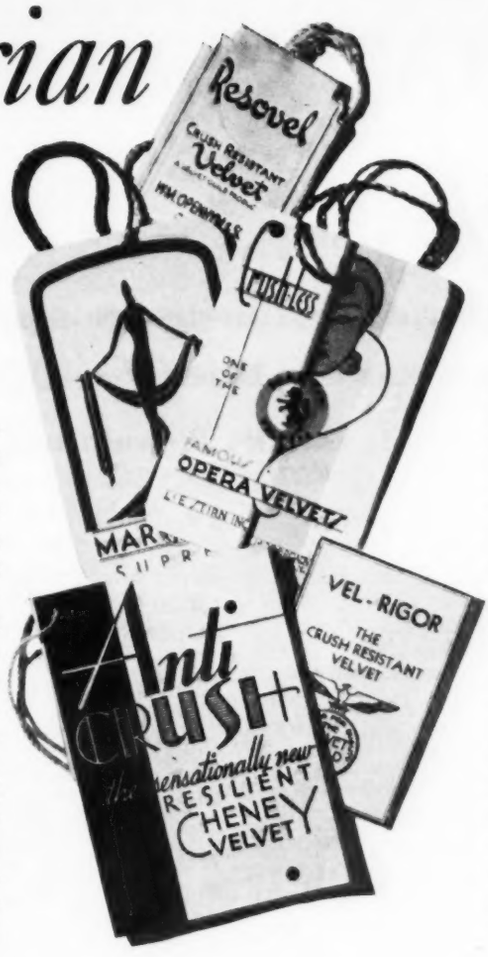
The boarding department foreman should check on all color matches passed by the dyer and be responsible for all boarding and finishing duties, as well as supervising a check off on the count of all dyed lots of goods.

The finishing department forewoman or foreman is responsible for the condition and quality of all merchandise between the boarding department and the shipping department (or stock department). These duties include supervising the inspection of dyed goods; the pairing, trademark stamping, folding, and boxing of all first-, second-, and third-quality goods. This position ties in with all departments, as any defects should immediately be called to the attention of the responsible foreman.

The sales department likewise is a necessary cog in the machinery. Instructions for knitting, footers size scale, shades to be dyed, inspection of finished goods, and shipping all originate from the sales department. However, the sales department should not give instructions directly to the department heads, but to the general manager. The latter, in turn, issues the necessary orders to the knitting superintendent and the various foremen.

All executives must be responsible to one chief executive—the general plant manager. This manager may be the head of the business or he may be next in command; but all departments are responsible to him and look to him for instructions and corrections. Any subordinate duties should be assigned and delegated by the general manager to whatever executive he thinks should be responsible and best suited to handle the detail.

The attitude of "let the other fellow do it" never gets the job done right. The best way is to assign each job to some one person and make him responsible for it. This will also prevent anyone from encroaching on another man's job. When a man knows an assignment is his and nobody else's, he realizes that the responsibility is also his. Any failures or errors will be chalked up against him; any creditable productions or improvements will be to his credit.

Proletarian Velvets..

New crush-resists hailed as boon to modest purse

BEHIND the recent and matter-of-fact announcement by the Velvet Guild of its new line of crush-resistant velvets, lies a story of broad significance to the textile industry. It marks the first application in this country of the Tootal, Broadhurst & Lee anti-crease process to pile fabrics, and it is significant not only because it has opened new markets to transparent velvet manufacturers, but because it points the way to similar expansion for other pile fabric divisions.

The advent of crush-resistant velvets might be described as a story in four chapters as follows: (1) application of process to pile fabrics; (2) merchandising policy adopted by the Velvet Guild; (3) effect of new line on velvet market, prices, etc.; and (4) future development of process in other pile fabrics.

CHAPTER ONE—After a year of testing and development work by transparent velvet manufacturers in co-operation with technicians of the Tootal, Broadhurst & Lee Co., plans for applying the process to these fabrics were completed in June and licenses were issued to most of the principal manufacturers, including those who were not members of the Velvet Guild. The chief advantages of the anti-crease process in transparent velvets are that it makes the pile resilient and helps it to recover quickly after crushing; it enables the fiber to retain its original vitality both with respect to appearance and drape. These qualities are not impaired by other processes nor by dry-cleaning of the fabric. Allowing for certain differences due to the pile surface on velvets, the process is fundamentally the same as that applied to flat fabrics. The mills report that they have no particular difficulty with the treatment. Little added equipment is required as a rule. At the start technical information and instruction was supplied by Tootal representatives, but no Tootal technicians are stationed at the mills.

CHAPTER TWO—The keynote in the merchandising of crush-resistant velvets as conceived by the Velvet Guild is that these fabrics have a new and different identity. The qualities added by the process, it is contended, have changed transparent velvet from a luxury fabric, too costly for the average woman because of its fragility, to an economical fabric available to the modest purse. To promote the new line, the Guild has launched a national drive which has four main divisions: (A) distribution of literature to stores; (B) releases to trade and consumer press (C) radio and movie promotion; and (D) education on how to restore freshness to crush-resist velvets. On last-named point the wearer is instructed that ordinary creases will vanish if the garment is hung up overnight and that for pronounced creases the garment should be ironed lightly wrong-side-out while suspended in mid-air on a clothes hanger.

A distinctive feature of the merchandising policy is the effort made to avoid overclaims regarding the new process. The Guild literature emphasizes that the line "should not be interpreted as non-crushable," adding that "any fabric which has a pile cannot be absolutely foolproof in this respect." The processed fabrics are promoted under individually coined names, such as "Mar-less," "Anti-crush," etc., and no effort is made to identify the process as such.

CHAPTER THREE—Crush-resistant velvets have had a generally recognized tonic effect on the transparent velvet market as a whole. They are selling spiritedly at about $1.95 per yd., while untreated velvets have been selling at $1.15, which for some firms is scarcely more than cost. Part of this added price is absorbed in the increased cost of processing the fabric. So favorable has been the market reception of the new line that conservative trade factors who at first deprecated the Guild's description of the process as "revolutionizing the velvet market" now believe the innovation may have far-reaching significance. The manufacturers are vigorously promoting the new line to non-velvet markets with encouraging results. The sales possibilities here are quite diversified, as the process applies to all transparent velvets, including ready-to-wear accessories, yard goods, etc. The retailer will have a new sales point for velvets for various uses.

CHAPTER FOUR—With respect to the prospects for applying the process to other pile fabrics, it must be kept in mind that the method has advantages apart from crease- or crush-resistance, and these have material bearing on market expansion. For instance, the Tootal interests expect shortly to license manufacturers of automobile upholstery. In this field creasing or crushing are relatively unimportant; however, the process is expected to prove valuable in that it helps the pile surface to stand up under wear. Other pile fabrics to which it is indicated that the process will soon be commercially applied, are cotton velveteens, a wide range of corduroys, and drapes.

GERMANY'S Staple...

How does it measure up to the older fibers?

By Otto W. Bitzenhofer
Krefeld, Germany

◆ *In our July issue, page 66, Mr. Bitzenhofer explained the progress that Germany has made in developing rayon staple fiber as a means of achieving raw-material independence. In this article he describes the staple now being produced in his country.*

RAYON staple can be made one-third finer than the natural silk fiber[1] and, when used alone, can therefore produce a woven fabric which is softer than an all-spun-silk fabric. When mixed with cotton, wool, or silk, the cut rayon increases the softness. The equal length of the fibers in rayon staple makes it possible to decrease the number of turns of twist per inch, when spun alone, by 25 to 30% and still produce a yarn with a working solidity equal to that of a yarn of another fiber spun to the same count.[2] A 50% mix of rayon staple allows the twist to be reduced 15%, which gives a corresponding increase in the softness of yarns or fabrics.

All the manufacturers now producing rayon spinning fiber in Germany make the bright, semi-dull, and dull types of staple. Luster can be varied, however, by the number of turns of twist in the yarn, the yarn becoming duller as the twist is increased. Used with cotton, a 50% mix of regular rayon staple will produce a sheen similar to that obtained by mercerization.

High twist in the yarn and a close weave will naturally increase the resistance of the cloth to creasing. A wide difference in twist between warp and filling will also help. When mixed with fibers other than cotton, it is well to keep the percentage of rayon fiber low, if resistance to creasing is desired; and the range runs from 10% of rayon staple in light-weight goods to 50% in heavy-weight fabrics. In general, a mixture containing 20% of rayon staple makes little difference. As cotton is not so resistant to creasing as staple rayon, not much can be expected of light-weight mixtures of the two.

For coarse yarns, the price of synthetic fiber in Germany is about 2.2 to 2.5 times that of cotton; in the fine-yarn range it is 1.8 to 2.0 times greater. Although more expensive than cotton, rayon spinning staple has the advantage of being 97% clean and workable. Staple costs three- to six-tenths as much as raw wool. The fact that the price of cut staple does not depend upon harvest and world conditions insures a degree of stability.

The reason that rayon spinning fiber is cheaper than continuous-filament rayon lies in the method of production. Spinning fiber is produced as a tape of 200 to 600 filaments, while the number of filaments coming from the spinneret in regular rayon is limited by the denier to be produced. For example, 45-denier has only 15 to 18 filaments; and 75-denier, 25 to 28.[3] Further, broken filaments, variations in the ripeness of the cellulose xanthate, etc., are of little importance where the fibers are all mixed together, as in cut staple, but increase the cost of continuous-filament yarn. A number of winding operations are also eliminated when the filaments are cut automatically. Although an all-rayon-staple cloth is more expensive than a cotton cloth, the price of mixtures can be varied by changing the percentage of the mix; with a 50% rayon-staple mixture, the cost runs 25 to 30% above an all-cotton fabric. Mixed with wool, use of rayon staple reduces the cost 10 to 30%, depending on the mix.

That rayon spinning staple is giving satisfaction is obvious from the fact that production has been increasing in Germany for a number of years, despite the price and despite the availability of other fibers in unlimited quantities up to two years ago. Staple filament has a strength of 2.2 to 2.5 grams when dry, 1.5 to 1.8 grams when wet. Automatic cutting into staple gives 92 to 95% of equality of length, insuring a high degree of workability. Staple yarn in the dry state is 95% as strong as wool yarn and 85% as strong when wet. The density of the yarn is 12% greater than a cotton yarn, and there is greater evenness. In the weaving, yarns of rayon spinning fiber can safely be stretched 3.0 to 4.5%, but this leaves a permanent elongation of 1.2 to 1.5%.

While rayon spinning fiber absorbs moisture and perspiration twice as fast as wool, it actually takes up a total of only 5 to 8% more moisture. A 10 or 20% mixture of staple with wool makes only a 2% difference in time of absorption or drying, but a 50% mix will absorb moisture twice as fast and take 30 to 50% more time to dry thoroughly. Cloth of curled rayon spinning staple is 20% more conductive of heat or cold than a wool fabric, but is less conductive than a similar cotton fabric. Where protection against cold is desired, a 10 to 30% mixture with wool will cause a loss of insulation of only 6 to 7%. Staple fabrics shrink about like wool.

Rayon spinning fiber, being a vegetable, or cellulose, material, is not attacked by moths. If, however, wool is indiscriminately mixed with rayon staple, the indigestible cellulose will be eaten as well, even though it leave the body of the moth undigested. When one body of fibers is covered by the other, however, the interior fibers will be spared. Thus, if a rayon staple is covered with wool, the wool will be eaten by moths and the rayon spared; a wool lightly covered with rayon staple will also escape.

As the acetate type of cut staple has a higher resistance to moisture than the viscose type, it is particularly suited, either alone or in mixtures, for use in umbrella-cloth, bathing suits, underwear, overcoatings, hosiery, etc. This fiber is most suitable for mixture with wool, as it has a rough surface, a specific gravity close to wool, and elasticity 4.5 to 5.0% higher than other synthetics.

[1] It is not so made commercially in the United States. See "Staple No Substitute," September, page 107.

[2] For a comparison of twists in rayon and cotton yarns, see "Courtaulds Spins Staple," February, page 64.

[3] Much higher filament counts are produced in the United States. See Textile World's *1935 Textile Yearbook and Consolidated Catalogs*, page 45.

ITALY'S Staple...

Success is being encountered in competition with cotton and wool

By Vincent de Pascal
Milan, Italy

The glossy fiber shown above is Bobol Sniafiocco, 40-millimeter staple, 1.5-denier, and is used for mixtures with, or as a complete substitute for, cotton. The dull sample is Lenal Sniafiocco, 80-millimeter staple, 2.75-denier, and is used for mixtures with, or as a complete substitute for, wool. Either type is obtainable dull or glossy.

◆ *Italy and Germany lead the world in the manufacture of rayon staple. In this article Mr. Pascal describes, as does Mr. Bitzenhofer for Germany on the preceding page, the character of the staple produced in his country.*

IMPORTS of cotton by Italy are being hard hit by the intrusion of artificial cotton—that is, rayon staple—into this country's textile industry, not to mention the rigid restrictions imposed against the import of textile fibers. In Italy the new fiber is known by three names—Sniafiocco, Gerlifiocco, and Cisafiocco—which are each a combination of the word "fiocco," which is Italian for "staple," with the name of the producer. The staple is furnished in any length from 27 to 160 millimeters ($1\frac{1}{16}$ to $6\frac{1}{3}$ in.) and in deniers from 1.5 for mixture with cotton to 5.0 for mixture with wool. During the last year the Royal Experimental Station for the Paper and Vegetable Textile Fiber Industries, in Milan, has been conducting exhaustive tests on the "fiocco" fibers, and some of the results of these tests are now available for the first time.

It has been found that the fiber's greatest handicap is its solidity, which renders the staple fabrics "cold" in winter and "hot" in summer[1] and automatically limits its widespread use as a substitute for cotton and wool fibers.

Laboratory tests on fibers 27 millimeters (about $1\frac{1}{16}$ in.) long show staple to have an approximate tensile strength of 3.3 grams per fiber when dry, whereas comparable American cotton fibers of the same length have been found to have a strength of 4.8 grams and therefore to be stronger by some 31%.[2] Staple loses some 40 to 45% of its strength when wet, while cotton gains some 15 to 20%. The stretchability of rayon is more than twice that of cotton and increases at a more rapid rate when the fiber is wet.[3]

Inherent Advantages

While staple has the disadvantages mentioned, it also has numerous advantages over cotton so far as the spinner and weaver are concerned. The artificial fiber is softer and possesses a brilliancy not unlike fine Egyptian cottons. While it costs about the same as raw cotton, the cost of producing textiles from it is lower, because the staple, on reaching the spinning mill, is exempt from the costly cleaning and bleaching processes in the course of which—largely because of leaf and dirt content—natural cotton loses 8 to 12% of its net weight. Combing and mercerizing are unnecessary, because the artificial stock contains no short fiber and already possesses a natural gloss. The staple is finer than American cotton—1.5 denier for the former as against 1.8 denier for the latter. Sak. cotton may be finer than 1.1. denier.

Another considerable advantage which the spinner finds in artificial fiber is the fact that the staple graph is almost 100% uniform, whereas a graph for natural raw cotton shows an irregularity of 10% in exceptionally even-running qualities and as high as 50% in poorer qualities. The uniformity of the rayon staple is extremely important for the regularity of the yarn and the smooth running of the mill machinery.

In Italy the problem of blending staple cut fiber with natural fibers assumes a certain national importance, because the new fiber permits a greatly decreased importation of the latter from abroad. During the last year rayon staple proved itself a boon to the country's staggering trade balance, as well as the Italian spinner, who has been extremely hard put to keep his mills going in the face of the rigid import restrictions on textile fibers.

Snia Viscosa, for example, is swamped with orders from Italian and German spinners and cannot promise deliveries for several months—although it is operating on four shifts and is opening several new plants. One large American cotton shipper has already suffered directly from the use of this substitute cotton fiber to the extent of losing a customer who had hitherto bought from 1,000 to 2,000 bales of lint annually. Today, La Sanitaria, one of Europe's largest producers of absorbent cotton, medical gauze, and gun-powder sacks, has turned to the use of staple entirely.

•

[1]In England, it is reported, a staple which is hollow for most of its length, but closed at each end, has been developed. Lack of heat insulation in rayon staple, however, is largely due to its lack of springiness, which prevents the retention of an adequate dead air space within the yarn. For other handicaps, as well as advantages, of rayon staple, see "Staple No Substitute," September, page 107.

[2]The discrepancy between the strength figures offered by Mr. Pascal and by Mr. Bitzenhofer on the preceding page may be due to different deniers having been used in the tests; but since the denier is not stated in either case, it seems proper to assume that it was 1.5. Fiber strength, however, is never necessarily proportional to yarn strength; and for a discussion of the latter, see "Courtaulds Spins Staple," February 14, page 64.

[3]These comments regarding stretchability do not, of course, apply to elasticity, with respect to which all rayons are notoriously poor.

Labor turnover reduced by

Employment Department

By William G. Ashmore
Southern Editor, TEXTILE WORLD

◆ *This article does not attempt to set up a model employment department applicable to every mill. It merely points out certain basic features of a number of departments studied by the writer. It is hoped that a manufacturer interested in setting up such an activity may find herein suggestions helpful in its development.*

A STUDY of the personnel or employment departments of southern textile mills shows that executives are giving more and more thought to vital problems which inevitably arise each time a person is employed or discharged. In fact, within recent years many of the larger organizations have added to their managerial staffs trained employment managers, who, in cooperation with the operating executives, have developed central employment departments, especially adapted to the mill in question. However, by far the largest number of textile plants, and this includes some of the very largest groups, leave all "hiring and firing" to the superintendent and overseers.

A careful investigation of employment departments of a number of representative mills, geographically scattered, found no two systems alike, although all had many features in common. It is the purpose of this article to discuss some of the basic features of each of several departments studied.

The employment department obviously is designed to investigate each person who applies for a position, and to record such information as may have a bearing on his service with the mill. The keynote should be simplicity and flexibility. The chief advantage of any employment department is that it reduces labor turnover tremendously. For example, a mill that had always had a very high percentage of turnover found it reduced to 1.28% per month during the first seven and one-half months after installation of an employment department. Another mill, sponsoring a similar system, reported a turnover of 3% per month for the first quarter of 1935.

Other advantages are almost too numerous to cite. A better quality help inevitably results in production of better quality goods. Undesirable and inferior workers are kept out of the plant, which automatically increases the conscientious, reliable worker's chance of securing a job. The act of employing is kept on a systematic and impersonal basis. The supervisory staff is enabled to devote its time exclusively to production problems without interruptions from job seekers. Workers have the privilege of discussing their personal problems with the employment manager, part of whose job is to listen sympathetically to each story.

It is easy to see how an employment department would be valuable to the mill in which it is located. It is also easy to see how such a department would be valuable to other mills in the area—provided the other mills had similar systems. If every mill in a certain area operated an employment department, students of labor problems believe that it would not be long before inferior and undesirable labor would avoid that area.

Enthusiastically declaring that the employment department recently developed at his mill is functioning perfectly, one superintendent pointed out certain basic principles, without which, he said, the system could not exist. These were as follows:

1. In no sense can the system be considered by any employee as a *blacklist* expressly designed to keep him from securing work at some other plant.
2. The honest, efficient worker no longer has to wait for a job until the lazy, inefficient, or troublesome employee is fired. The undesirable man under the new plan is rejected before he gets into the plant.
3. No applicant is queried regarding labor union affiliations.
4. Simplicity is the keynote of the system. All information eventually is transferred to one card.

The Personnel Manager—Obviously, the first and most important step in organizing a central employment department is to engage a trained, competent person—man or woman—to put in charge. This person must be a very versatile individual, as well as very patient, for daily he will be called upon to play the part of psychologist, sociologist, diplomat, technician, confidant, detective, and judge—in addition to managing a more or less complicated filing system and the usual office routine. His chief requisite, however, must be an ability to understand and appreciate human nature, with special reference to its frailties and idiosyncrasies.

The Interview—In most mills, the employment manager interviews and investigates each applicant, and records information relative to his case before the overseer so much as sees him. Always, however, final decision in employing new help rests with the overseer. On the other hand, one of the largest mills in the South has a system whereby the applicant first interviews the overseer, who, if he likes his appearance, sends him to the employment office to file a formal application for work and to be investigated. The usual procedure in mills where the employment manager holds the first interview is for him to ask the applicant a few preliminary questions such as: "What kind of work do you want? What jobs can you fill? Where did you work last? Why did you quit? Did you ever work for the company before?" If the applicant previously had worked for the company, his record is checked immediately, with particular reference to why he left. During this questioning, the manager studies the applicant carefully and usually is able to decide then and there if he is the type person which the mill needs. Often drifters, beggars, trouble-makers, drunkards, and other undesirables can be eliminated at this stage of the game, thereby saving much time and effort on the part of the employment department. In addition to "sizing up" the applicant in a general way during this first interview, the manager studies him with reference to his physical ability to hold the job he asserts he is qualified to hold.

Formal Application—If this cursory examination convinces the employment manager that the applicant is worthy of further consideration, additional information is secured from him and written into a formal application form. Fig. 1 is a replica of a form used in a South

Carolina cotton mill. Some mills insist on the applicant placing his signature at the bottom of the form, declaring the psychological effect to be similar to that of signing a contract. Other mills inquire as to the physical condition of the applicant and the name of his physician.

Investigation of Applicant—Following the preliminary interview, and filing of the formal application, a letter, such as shown in Fig. 2, is sent to the applicant's present or last employer. The general practice is to send out printed or mimeographed form letters, although some report that a personal letter secures better results.

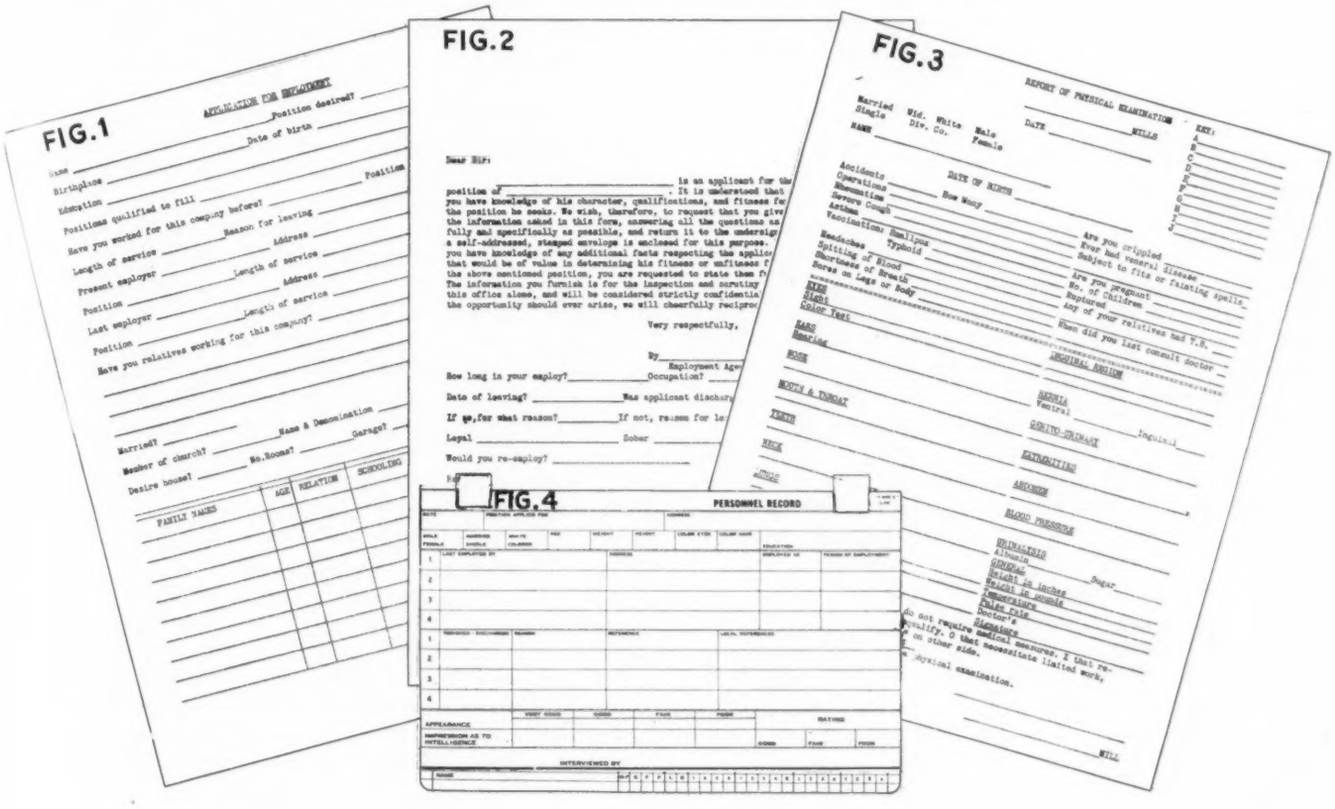
The Physical Examination—Having been found mentally and morally satisfactory, the applicant is summoned to the mill and subjected to a very thorough physical examination. Many mills do not deem such an examination necessary; others stress it most highly. Fig. 3 is a striking example of how thoroughly one organization investigates the health of those who apply for work.

Interview with Overseer—All of the foregoing information is filed and the applicant is informed that he will be summoned to the mill as soon as an opening occurs. Eventually, the overseer sends to the employment office a requistion for from one to several persons to fill certain positions. Applicants whose records are on file are summoned to the mill in the order in which they applied for work. If only one position is open, the person who first applied for work is sent into the mill to meet the overseer and to inspect the job he will be expected to run. The overseer interviews the applicant and reports his reactions to the employment office. In most cases, an applicant approved by the employment manager is accepted by the overseer at face value. However, as previously pointed out, it is always the privilege of the overseer at this time to reject any person sent him from the office, providing he puts his reasons in writing.

The Permanent Record—Having been found acceptable by both employment manager and overseer, the applicant is put to work at once, but not before the overseer has an opportunity to explain all safety rules and regulations which apply to the job and to the mill in general. An older employee, usually a section hand, is assigned to keep an eye on the new worker until he becomes thoroughly familiar with the job. As soon as the name of the new employee is placed on the payroll, all of the data from the application form and from the letter of inquiry are transferred to a permanent record card, such as shown in Fig. 4, and placed in an active file. The physical examination report is attached.

The Second Interview—After having worked a week or more, the new employee is summoned to the employment office. There, the manager asks him how he likes his new work, how he is progressing, if he intends staying with the company, etc. Having put the worker at ease, the manager then proceeds to explain the advantages and benefits offered by the company; viz., old-age pension plan, educational facilities, community activities, safety club, Christmas savings club, garden club, and other features of village life. Before being dismissed, the worker is assured that the employment department is ready and anxious at all times to help him with any problems which may arise, personal or otherwise.

Termination of Employment—For any one of several reasons, an employee decides to quit his job and move on. However, before he receives his time, the employment manager makes every effort to discover his reasons for leaving. These reasons, boiled down to as few words as possible, are then typed on a sheet of paper. If the employee is satisfied with the correctness of the typed explanation, he signs at the bottom. At this time, or as soon thereafter as convenient, the overseer's version of the termination is typed just below the employee's signature and signed by the overseer. Copies of both explanations are then distributed to the superintendent, general manager and other interested parties. The psychological effect of this system is said to eliminate much unexplained "quitting" as well as "firing." The original of this "quit-slip" is then clipped to the permanent record card, along with the physical examination report and other data, and the whole is transferred to an inactive or "dead" file of ex-employees.



Let the Finisher Know

When you switch to mineral oil lubricants for wool

By David W. Welsh

MANY and mysterious were the compounds placed on the market under the label "Wool Oil" when mineral oil was first introduced to the woolen and worsted industry as a fiber lubricant. The action of these materials in fulling, scouring, and dyeing produced effects which had never been experienced when animal and vegetable oils were used as stock lubricants. Today many mills have switched to mineral oil compounds, and their dyers and finishers have mastered the problems which first arose. The writer believes that some of his experiences in scouring and fulling woolens and worsteds containing mineral oil may be illuminating to other finishers who are confronted with similar difficulties.

In a large worsted mill, the product of which was mainly blue serges, and on which the management banked its reputation for quality, uniform finish, and levelness of color, there suddenly appeared a cloudy piece in some of the sets of eight pieces, the remaining seven pieces being perfect. Later there would be one, two, and sometimes three cloudy pieces in a set. These serges were scoured in the regular type of cloth washer, and the scouring formula was one which had been used for years.

As the number of cloudy pieces in each set increased, consultations at the perches were frequent and exciting. Those in charge of the soap making and the handling of materials used in the preparatory emulsion were hailed to the examining room and shown the results. A general denial was made, quite emphatic: "No changes had been made whatever." But still the cloudy-piece pile grew to huge proportions. Nothing could be done to eradicate the clouds, and eventually it was necessary to dye the goods black. Black serges are not fast sellers.

After Many Arguments

The finisher declared that mineral oil was being used on the stock, but that idea was quickly ridiculed. "No mineral oil had ever entered that mill." After many arguments, none of which seemed to get anybody anywhere toward a solution of the mystery, it was finally proved that the finisher was correct; some one, in an attempt to save money for the company had purchased a lubricant containing mineral oil, but had failed to notify anybody else that a change had been made.

In the meantime, the finisher, working on the assumption that there was mineral oil in the goods and that this could not be saponified, but must be emulsified, made up a solution of 8 oz. to the gallon of a high-grade tallow soap. He then scoured eight pieces with this solution and eight pieces in the regular way, split the sets, and had four pieces from each set dyed together. All pieces scoured with the tallow soap were free from cloudiness; four pieces which were scoured in the usual way were cloudy. He then scoured ten full sets of eight pieces each by the new formula, and the 80 pieces all were free from cloudiness. By this time it had been definitely established that the trouble first started when goods containing mineral oil began to come through to the finishing department.

Another mill making 32-oz. meltons from rags and clips found it difficult to full to weight and to obtain sufficient cover. It took from 4 to 4½ hours to get the goods up in the mill, and they finished about 2 oz. too light. It was found that a wool oil containing 85% mineral oil and 15% fatty oil was used in making the emulsion. This condition was corrected by the use of a soap made up of 12 oz. of palm oil soap and 1 oz. of alkali. With this combination, the goods fulled in half the time (2½ hours), and, when finished, the first pieces weighed 34 oz. The shrinkage on subsequent lots was reduced to bring them down to 32 oz. A clear gain of 2 yd. to each piece was made, as compared to the previous fulling, and a beautiful smooth-faced melton resulted.

A Year of Struggles

A plant which made yarn for its carpet mill in another city had surplus space and machinery and decided to make worsted cloth, mainly serges of a medium grade. This company installed 60 looms and the necessary equipment for dyeing and finishing. For one full year it struggled with those serges, but produced nothing but seconds and blacks. Finally, a change of finishers was decided upon. The new finisher asked what type of emulsion was used on the stock. He was informed that a straight mineral oil was employed, as it had proved very satisfactory for their carpet yarns. The finisher stated that the goods could be dyed and finished without difficulty, but the cost of finishing would be less if an olive oil emulsion were used. The mill decided in favor of the mineral oil, because the cloth department took only 20% of the yard production. By crabbing these serges in the grease and then scouring with an 8 oz. solution of palm oil soap, the finisher overcame all of the difficulties which had perplexed his predecessor.

The writer believes that most of the trouble which has followed the use of mineral-oil lubricants is due to the fact that no one has bothered to tell the finisher of the change. As a result, the finisher's first impulse, when anything goes wrong in scouring or fulling is to add more alkali to the bath. Naturally this does not help matters, as what is needed is greater emulsifying power —not more saponifying power. In the specific cases cited above, the writer found tallow and palm oil soaps to be satisfactory. There are, of course, any number of other scouring and fulling agents which are suitable for use on goods containing mineral oil. Any real finisher should be familiar with the various types of soaps, oils, and other compounds which are available and should be able to handle such fabrics without difficulty. However, a finisher is not supposed to be a mind reader, and he should not be blamed for cloudiness or other defects if a switch is made to a mineral oil lubricant without informing him of the change.

Cotton-Roving Twist Chart

Designed and copyrighted by ***T. W. Lawton***

THIS remarkable new chart, which is here made available to the cotton industry through the courtesy of the Rooney Hi-Drafting System, 49 Westminster St., Providence, R. I., shows the turns per inch required for any roving from 0.50 to 20.00 hank and of any staple length from $\frac{7}{8}$ in. to 47-50 millimeters (nearly 2 in.). The lines designating staple lengths are lettered at the lower right-hand corner of the chart according to the following key:

KEY TO STAPLE LINES

A— $\frac{7}{8}$ in.	G—$1\frac{5}{16}$ in.
B—1 in.	H—$1\frac{3}{8}$ in.
C—$1\frac{1}{16}$ in.	I—37-39 mm.
D—$1\frac{1}{8}$ in.	J—40-43 mm.
E—$1\frac{3}{16}$ in.	K—44-46 mm.
F—$1\frac{1}{4}$ in.	L—47-50 mm.

Note: The staple-length lines are drawn primarily to conform to the official cotton standards of the United States; but, there being no definite standards for foreign cottons, lines I, J, K, and L are adapted to the "Egyptian C.C.C." lengths.

A table by Mr. Lawton, serving the same purpose as this chart, will be found on page 32 of the 1935 edition of the "Textile Yearbook and Consolidated Catalogs," published by TEXTILE WORLD.

Hank Roving	Square Roots
0.50	0.707
0.55	0.742
0.60	0.775
0.65	0.806
0.70	0.837
0.75	0.866
0.80	0.894
0.85	0.922
0.90	0.949
0.95	0.975
1.00	1.000
1.05	1.025
1.10	1.049
1.15	1.072
1.20	1.095
1.25	1.118
1.30	1.140
1.35	1.162
1.40	1.183
1.45	1.204
1.50	1.225
1.55	1.245
1.60	1.265
1.65	1.285
1.70	1.304
1.75	1.323
1.80	1.342
1.85	1.360
1.90	1.378
1.95	1.396
2.00	1.414
2.25	1.500
2.50	1.581
2.75	1.658
3.00	1.732
3.25	1.803
3.50	1.871
3.75	1.936
4.00	2.000
4.25	2.061
4.50	2.121
4.75	2.179
5.00	2.236
5.25	2.291
5.50	2.345
5.75	2.397
6.00	2.449
6.25	2.500
6.50	2.550
6.75	2.598
7.00	2.646
7.50	2.739
8.00	2.828
8.50	2:915
9.00	3.000
9.50	3.082
10.00	3.162
10.50	3.240
11.00	3.317
11.50	3.390
12.00	3.464
12.50	3.535
13.00	3.606
13.50	3.674
14.00	3.742
14.50	3.807
15.00	3.873
15.50	3.936
16.00	4.000
16.50	4.062
17.00	4.123
17.50	4.183
18.00	4.243
18.50	4.301
19.00	4.359
19.50	4.415
20.00	4.472

Square Roots

Turns per Inch

DIRECTIONS

On the extreme left-hand scale find the hank of roving to be made. Follow a horizontal line from that point to its intersection with the diagonal line representing the staple to be used. Read upward to the diagonal scale on the right, which gives the turns per inch required. (The two scales for square root of the hank, one giving the square roots of the hank figures actually shown and the other giving the square-root numbers in tenths, were important to the development of the chart but are not essential to its use.)

Application of new and simple rules of Color

By Faber Birren

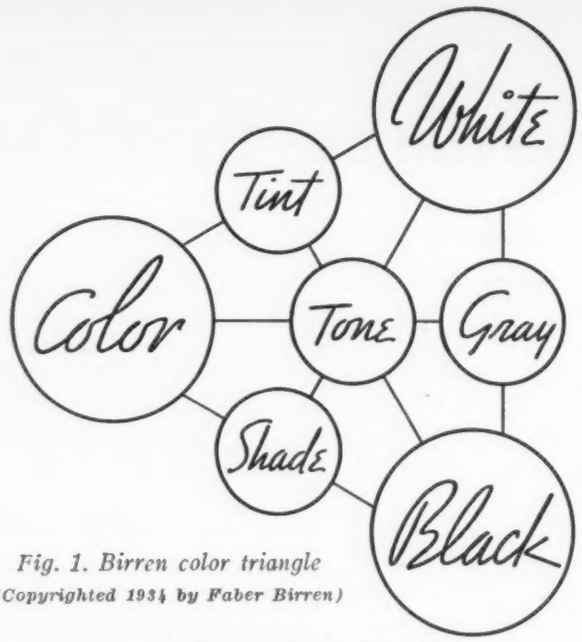


Fig. 1. Birren color triangle
(Copyrighted 1934 by Faber Birren)

I. Pure colors harmonize with white and black.
II. White, gray, and black harmonize.
III. Color, tint, and white harmonize.
IV. Color, shade, and black harmonize.
V. Tint, tone, and black harmonize.
VI. Shade, tone, and white harmonize.
VII. Color, tone, and gray harmonize.
VIII. Color, white, and black (the primary triad) and tone harmonize.
IX. Tint, shade, and gray (the secondary triad) and tone harmonize.
X. All seven forms harmonize—pure hue, white, black, tint, shade, gray, and tone.

FOR a long time the study of color harmony has been lost in a maze of arbitrary theory and stilted dogma. Today, however, a new art of color is on the way. Fundamental principles of harmony are being developed through an analysis of human reaction. The eye and the mind are being consulted in preference to the spectrometer. As applied to textile design, this new and psychological art of color gives encouraging promise. The mysteries of color are at last being reduced to understandable terms. Rules of harmony are being divulged which are reasonable, because they have a basis in things personal to beauty.

Refer to the simple color triangle shown in Fig. 1. What are the elements of color? As far as the eye is concerned, there are three primary forms—pure color (or hue), white, and black. These three forms, in turn, combine to produce four secondary forms. Pure color and white produce tint; pure color and black produce shade; white and black produce gray; color, white, and black produce tone. Each of the seven forms is unique. Tints differ in appeal from pure hues or shades. Red is a popular color in its pure state, but seldom is liked as a tint. Orange makes the most appealing of all shades (brown), although in pure form it ranks low among other full hues.

It is no longer sufficient to think in terms of color alone. Beauty is more dependent upon form. Likewise, no rule of color harmony founded on pure hues can be applied with assurance to tints, shades, or tones. From the standpoint of beauty, the triangle proves useful as a device to plan schemes which respect visual color law. Any straight line leads to harmony. Pure hue, tint, and white, for example, are analogous combinations and always accord. This is because the forms are related to one another and have the same primary elements in common. Pure hue, tone, and gray is another harmony. Here two forms, unlike in primary elements, are brought into accord through the use of tone, which has all three primary elements. Harmony also exists with pure hue, white, and black; and with tint, shade, and gray. Here the forms are neatly balanced and pay respect to good visual order.

Brilliant Combinations

Contrast exists where the forms differ totally in primary elements. With tint and black, for example, the tint contains the two primaries (hue and white) not found in black. With shade and white, the shade contains the two primary elements (hue and black) not found in white. With pure color and gray, the gray contains white and black, which are missing in hue. For the most part, these combinations are brilliant, rather than soft, and are desirable in textile design only where a startling effect is desired.

Using the triangle as a basis for color arrangement, the textile designer will find that it suggests practical limitations and possibilities. Most workers who have a familiarity with color are well acquainted with the effectiveness of colors themselves—reds, yellows, greens, blues, etc. What hues to use will depend upon the effect one wants—soft, startling, brilliant, refined, warm, cool. Here individuality and taste reveal themselves. Rules as to the combination of hues are not as important. This is because the real problems of harmony begin after a key scheme is picked out.

In a word, ugliness is more likely to follow jumbled color forms than jumbled hues. Tints with shades, shades on black, dull grays with brilliant colors—here is where textiles fall down in beauty and fail to win public approval. However, with the triangle in mind, a good and reasonable order can be maintained. If pure hues tend to look garish on gray, for example, the clash can be made right if the hue and gray are separated by a tone. And so with other arrangements. Textiles comprised mainly of pure colors and shades may be thrown all out of harmony by introducing white. Black introduced among tints and white may cause disaster. In both cases, the order revealed by the triangle is being violated. The eye is not pleased, because there is no balance with respect to color sequence.

The triangle—which operates in terms of hue, white, and black, rather than hue, value, and chroma—is pretty close to the fundamental elements of sensation. Value and chroma are relative, while hue, white, and black are absolute. People more readily distinguish whiteness, blackness, and grayness in color than they do brightness or purity. Color schemes based on neatly related values are insecurely designed. Differences in illumination will throw them out of balance. However, if equal quantities of white or of black are built into the designs—without major respect to value—any shifts in illumination will change all tones uniformly and beauty will not suffer.

Nature sets examples like this. She softens colors

Harmony

Will result in better woven and printed designs

uniformly with atmosphere, dust, moisture, shadow. She is not concerned with value when she harmonizes colors on a general scale. She does not add black to some colors and white to others (as do many designers when they struggle with value). Nature works in terms of hue, white, and black.

Added to these facts are more psychological observations of interest to textile designers. The warm hues—red, orange, and yellow—ordinarily make the best shades. Maroon, orange, and olive green are cases in point. The cool hues—blue, green, and violet—ordinarily make the best tints. Tone is the universal color form. Because it contains hue, white, and black, it harmonizes with all other forms. As a background in textile designs it assures harmony, and almost anything can be employed with it.

Color Selection

To repeat, discordant effects are more likely to follow jumbled forms than jumbled hues. Therefore, the best plan is to consider effect first, decide as to the form one wishes to use dominantly (tint, shade, or tone) and then work from there. Form is important, because it, too, has distinction. Shades have a different appeal from tints. Some hues are attractive in pure state and unattractive when modified. Other colors, lacking in favor as pure hues, ride high in preference when mixed with white or black or both.

The psychological viewpoint can also be applied to color selection. Refer to the visual color circle illustrated in Fig. 2. There are four unique colors to the eye—red, yellow, green, and blue. These are primary, and all other hues bear resemblance to them. Orange, for example, looks like red and like yellow; but red and yellow do not look like orange. Green is distinct and has its own character. It has no resemblance to yellow or blue, despite the fact that it can be made from dyes of these two hues.

Intermediate on the visual circle are violet, orange, leaf (yellow-green), and turquoise (blue-green). These have likeness to the primaries. Still other intermediates exist, of course, and are located in continuous sequence around the circle between the primaries and secondaries.

Color appeal and effectiveness are largely influenced by the character of hues. Using old traditional principles of harmony and adapting them to this new circle many original schemes are developed. With adjacents, for example, a scheme comprised of red, orange, and yellow will be more striking and vivid than a scheme comprised of violet, red, and orange. In the first instance, two primaries are used with one secondary, and the result is bold. In the second instance, one primary is used with two resembling secondaries, and the effect is more mellow and soft. For this same reason, yellow, leaf, and green; or red, violet, and blue are both more striking than violet, blue, and turquoise; or turquoise, green, and leaf. A dominance of primaries makes a color scheme vigorous. A dominance of secondary colors suggests more refinement.

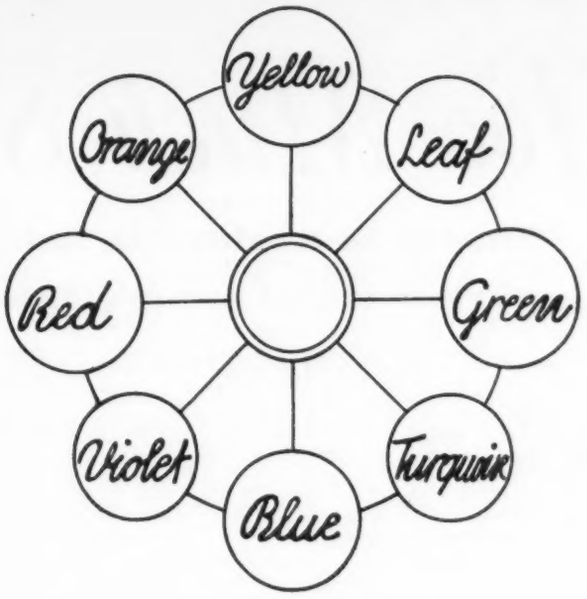


Fig. 2. Visual color circle

Visual opposites, like yellow and blue, are also more exciting than visual secondaries, such as orange and turquoise. So, too, with split-complements. Red and yellow with turquoise is far more spectacular than violet and turquoise with yellow. Two primaries with one secondary startle the eye more than do two secondaries with one primary.

A curious fact is that contrasting schemes seem to relate themselves to vision, while analogous schemes seem to relate themselves to emotion. With red and green, as a case in point, one hue complements the other, and the eye is thrilled. Yet the warm, advancing character of red collides with the cool, retiring character of green. Emotional values are destroyed in the compromise. But with related colors, like yellow and orange, each combination remains either dominantly warm or cool in feeling. Human emotions are better satisfied. Such schemes have personality. If they are likely to appear too soft, a greater brilliance often can be secured by adding a touch of something complementary—but not enough to neutralize the atmosphere of the scheme as a whole. Violet and blue, set off by a touch of yellow, for example, are highly pleasing. If the yellow is well confined, it will add sparkle to the combination. If the violet and blue are left to predominate, the textile will still be dominantly cool in sensation.

One fact peculiar to textiles is that a feeling of contrast can be readily destroyed if the hues are woven closely together so that the eye confuses them from a distance. Red and green in large area are vivid and powerful. Red and green woven together in warp and filling will appear gray and muddy. In close weaves, analogous colors alone maintain purity. Here the hues are not set at combat. The charm of many plaids and ginghams is to be found here. A more careful study of limitations and possibilities in the diffusion of colors should bring rewards.

The new art of color finds its basis in observation and things psychological. It replaces dogmatism with common sense and it makes color harmony a human science rather than an objective and physical one.

Too Much Sheen

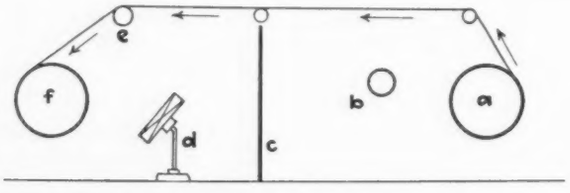
Should be avoided in finishing pure-dye and par-weighted flat crepes

By Philip Lebrun

AT THE present time the 55x84 pure-dyed silk flat crepe is one of the most popular fabrics on the market. On this material the trade desires a full, mellow hand, with a very slight but definite pebble and a soft luster. The cloth must drape easily and be soft to the touch without being soggy or having an oily feeling.

Flat crepes, as they arrive from the dyehouse centrifuge, are carefully opened up and are then dried on a dry box or loop dryer, not on a drying frame. After drying, end cloths are sewed on, and the fabric is rolled up on a shell with a minimum of tension. Goods which are to have a finished width of 39 in. are then stretched on a frame to about 38 in.

Pure-dye flat crepes do not chafe to any extent if properly handled previous to finishing. On the other hand, a par-weighted flat crepe—even though it is only slightly weighted to 25% to 35% of the finished weight—is likely to chafe in the wet finishing operations. Therefore, with par-weighted goods, the next operation in many cases is rubbing to remove chafe marks. Care



STEAMING APPARATUS made from button-breaker frame. a, roll of cloth; b, cloth-covered perforated steam pipe; c, sheet of tin to segregate steam; d, electric fan; e, hot steam pipe; f, take-up roll.

must be taken, however, to avoid coating the cloth with too much oil. While it is true that the rubbing oil will hide practically any chafe marks present, an excess will cause a soggy, oily feel and will darken the color of any piece-dyed shade. A good rubbing oil can be made by dissolving 2 qt. of denatured olive oil in 1 qt. of carbon tetrachloride and diluting to 2 gal. with naphtha.

After the fabric has been framed, and rubbed, if necessary, it is ready for sizing. For this operation, the writer prefers to use a dry box. When flat crepes are sized on a dry box, they can shrink and pebble naturally, without danger of a flat, shiny surface on one side of the cloth and a less lustrous surface on the other side.

The size is applied on the usual two-roll quetsch made of two cloth-covered, knurled, brass nip rolls. The size mixture is applied at a temperature of about 100° F. The constituents vary, depending on the exact construction of the fabric, the sample to be matched, the machinery available, etc. However, for a 15-gal. tub they should average about 1½ qt. of stiff gum filler, 3 qt. of soft gum filler, and 1 to 1½ qt. of sulfonated olive oil or other softener. Ordinarily, 15 gal. will suffice for 200 yd. of cloth.

A typical stiff gum filler consists of a 4% solution of gum tragacanth, and the soft gum filler is made from locust bean gum or a similar material. The stiff gum filler prevents the fabric from being too soft and limp, giving fullness to the cloth and slight suggestion of crispiness without actual stiffness. The soft gum filler adds weight or body to the goods, without making them crisp or harsh. The softener, not only does what its name implies, but also helps to keep the fabric from "marking white." An excess of oil should be avoided, as it would result in a soggy or oily feel.

Experience shows that par-weighted flat crepes usually require an addition of some duller, such as titanium oxide paste, to overcome the extra sheen imparted by the weighting process. In such cases, the stiff gum filler often is omitted. Sometimes it is necessary also to increase the oil content slightly to obtain the desired surface effect.

The cloth after sizing is stretched and calendered. All lengthwise tension must be avoided on the frame, in order to retain the slight crepe desired. The fabric must also be allowed to cool completely before calendering.

This may be accomplished, for example, by means of a cold-water cylinder on the delivery end of the frame. Calendering the cloth while it is still hot from the frame will tend to flatten the surface and make it quite lustrous. Both of these characteristics must be avoided.

Par-weighted flat crepes often are constructed as cheaply as possible. The smaller denier threads used shrink excessively and therefore require more stretching than a pure dye. This causes a flat and somewhat papery feeling cloth. It is possible to overcome this appearance to some extent by steaming the cloth. In small mills which do not have steaming or conditioning apparatus, it is possible to put a small steam box in the middle of an old button-breaker frame. All the breaker rolls are removed and one steam-heated roller is substituted. Live steam is blown through the cloth as it passes loosely over the steam box. The excess moisture is removed by momentary contact with the hot steam pipe before the cloth is wound up on a shell. This treatment results in a slight creping of the cloth without much shrinkage. It also tends to remove the sheen caused by excessive stretching. The creping is regulated to some extent by the amount of live steam used and the speed of the machine. Illustration at left shows suggested arrangement.

Printed flat crepes present a more difficult problem than piece-dyed flat crepes because of their lack of uniformity. Almost every design contains different amounts of gum, due to the larger or smaller surface actually printed.

Pigment prints are found especially difficult to finish satisfactorily. To obtain a satisfactory handle on the latter, it is best to give the cloth several runs through the button breaker before sizing it. The breaker makes the cloth more supple and takes out a great deal of the stiffness caused by the pigment and the binder used to fix the pigment.

Cut Effects

By R. A. C. Scott

In double cloths through 3-and-3 interchange—Imitation check-backs

◆ *In this article Mr. Scott discusses two subjects—first, the production of cut effects in double cloths by interchanging or interweaving the threads in three-and-three order; second, the designing of imitation check-backs or hung-on-backs with the object of producing light-weight fabrics having the appearance of double cloths.*

CUT EFFECTS produced by interchanging or interweaving the threads in three-and-three order are usually employed for cloths in which the threads are arranged two face to one back in both warp and filling. In fact, this is really the more common method of producing the cut effect. The cut lines, which are arranged to form a definite figure effect on the face of the cloth, are obtained by working two face threads between a pair of backing threads in a two-and-two order of weave intersection, cutting with each other as shown by the crosses at Fig. 78.

Moreover, the face float of two is arranged to include a face end or pick on each side of a backing end or pick. Where possible the cutting threads—indicated by crosses—should be inserted in such a way that they will not cut with the ground face threads. For instance, if the face weave is arranged so as to oppose the cutting threads, as illustrated at Fig. 79, which is defective, a more open and less distinct line is produced.

In the sections between the cut lines different weaves may be used, which, if properly combined, provide the means of obtaining elaborate and beautiful effects in the woven cloth. It should be borne in mind, however, that when the cut lines are separated by more than one repeat of the face weave, stitching in the ordinary way is recommended. In fact, when stitching is employed, a firmer and more serviceable piece of cloth is obtained. The same count of yarns may be used for back and face and give satisfactory results, although thicker yarns for back may be used when additional weight is desired.

Fig. 78 shows the face plan of the design illustrated at Fig. 80, which is a block-check arrangement of right and left two-and-two twill surrounded by a guard or continuous check of the two-and-two basket weave. The shaded squares in this design represent face weave; dots, the back weave (plain); diagonal marks, the lifters; and crosses, the cutting threads. By following these marks in conjunction with the face plan at Fig. 78, little difficulty should be experienced in fully understanding the method of construction employed. It will be noted that in the complete design—Fig. 80—the backing thread between each face float of two is given a corresponding float, causing the whole to interweave in a three-and-three order, as indicated by the crosses.

As the cutting threads weave tighter than the rest of the threads, it is customary to draw them through the front harnesses in order to minimize the strain during weaving.

The pegging plan is illustrated at Fig. 81; and the corresponding draft, at Fig. 82. Although eighteen harnesses have been used in this connection, the same effect could be obtained on twelve harnesses. For instance, on the block-check portion, six harnesses are used; but

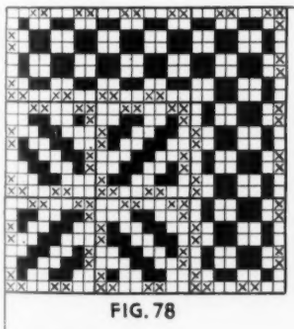


FIG. 78

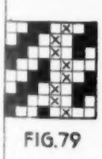


FIG. 79

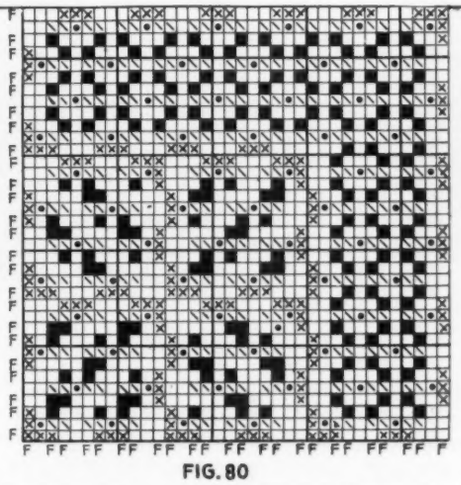


FIG. 80

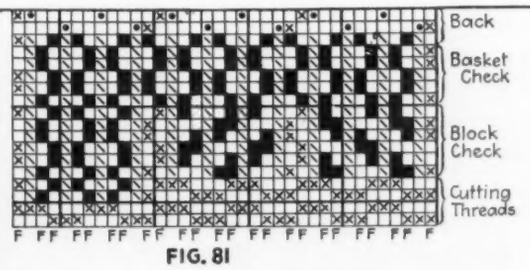


FIG. 81

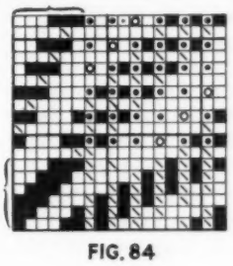


FIG. 84

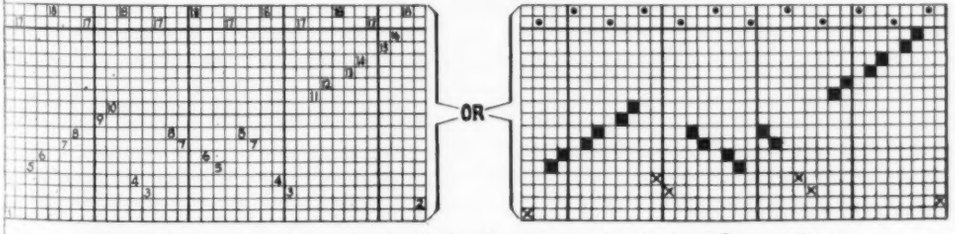


FIG. 82—Illustrating two methods of showing the drawing-in draft. On the left, by numerals; on the right, by the same symbols used in the design. The latter is preferable from the standpoint of clarity

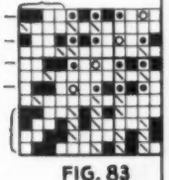


FIG. 83

it will be found on closer examination that threads 9 and 10 could be drawn on five and six, respectively. In like manner, 14 and 15 threads are the same as 11, and 13 and 16 are the same as 12. In this way the block-check part can be drawn on four harnesses, the basket check on two harnesses, the back weave on two harnesses and the cutting threads on four harnesses, making a total of twelve harnesses. However, the method illustrated at Fig. 82 is less complicated and lessens the liability to err in the drawing-in stages.

Imitation check-backs or hung-on-backs are made with the object of supplying a light- or medium-weight fabric having the appearance of a double cloth. In selecting a single-cloth weave for this particular fabric, care should be taken to allow for perfect stitching when the arrangement is one face to one back, as the extra threads which form the plaid on the underside are usually arranged in this order. Again, the checking yarn should be of a finer count than the ground yarn, as this arrangement lessens the danger of the checking threads disturbing the face appearance of the cloth. As these checking threads are extra, the setting of the cloth is the same as for single cloths; and in weaving, the check side is uppermost. The best results are obtained when a firm construction is used and finished without the fulling process; *i.e.*, scoured only. In order to prevent puckering, it is advisable to use similar qualities of yarn for ground and checking.

In weaving check effects on back, it is necessary to have a special attachment applied to the take-up motion so that the extra picks can be crammed when required. Looms suitable for this purpose have already been perfected in England and, it is said, are positive in action and in every way satisfactory.

In the following designs, the shaded squares represent face weave; diagonal marks, the checking weave; and circles, the stitching points. The dots indicate face ends up on backing picks where the checking threads intersect.

Therefore, the design illustrated at Fig. 83 represents 2/2 twill ground with 4 extra threads checking in three-and-one order and interlacing double 2/2 twill at the check intersection. The ground part, which is bracketed, can be repeated to the desired size.

The design at Fig. 84 shows the 3/3 twill ground with six extra threads checking in five-and-one order and interlacing in double 3/3 twill, etc.

Both of these designs are constructed so that, in weaving, the back will be up. This is the system generally employed. Therefore, if constructing the 5/2, move-2, whipcord weave on this principle, it would be necessary to mark the weave on design paper 2/5, move-2—*i.e.*, in the reverse form—due to the face weaving on the underside in the loom.

Other examples could be illustrated in further explanation of this system, but it is felt that the two illustrations given are sufficient to convey to the reader the method of construction and the purposes for which the system is most suitable.

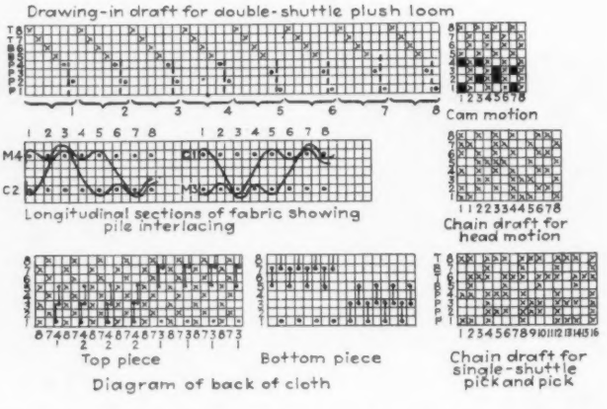
Previous articles of this series by Mr. Scott on backed, double, and treble cloths appeared June, August, and September, 1932; February, May, and October, 1933; February, 1934; and January, 1935.

Honeycomb Pile Fabric

By Ghent R. Robertshaw

Containing mohair and cotton in the tufts

Above is sample of honeycomb pile fabric and at right weaving details.


Drawing-in draft for double-shuttle plush loom
Cam motion
Longitudinal sections of fabric showing pile interlacing
Chain draft for head motion
Top piece
Bottom piece
Chain draft for single-shuttle pick and pick
Diagram of back of cloth

ILLUSTRATED herewith is an interesting fabric suitable for sport coats and for trimmings on other coats. Not only is it unusual in that it employs a honeycomb weave, but it also employs two yarns composed of different kinds of fibers in the pile warps. The weave is of such character that both the ground warp, which is yarn-dyed black, and the filling, which is white or natural, show through on the face. One pile warp is mercerized cotton yarn-dyed a light shade of rose; and the other is mohair dyed a light shade of brown in the piece. Thus four colors well blended together appear on the face of the fabric. It is a beautiful cloth.

In the accompanying drawing-in draft, which is for a double-shuttle plush loom, it will be noted that the ground warp is a straight draw. The dotted lines between the pile ends indicate where small round wires with a loop on one end hang from a small steel rod which is inserted in front of the pile harnesses. The loops in the wires, which are the means of threading the wires on the rod, should work easily on the latter. Each wire passes between the two pile ends in the same dent to separate the ends after they have been lifted or lowered on the same pick. The wires should be long enough to stay in place—say, 14 in.—and should hang like lingoes on a jacquard.

The weaving details for a 54-in. finished cloth are as follows: 2/16 ground warp, 4536 ends inside selvages; 2/16 filling, 34 picks per inch in finished cloth; 2/24 mercerized cotton, 1134 ends; 2/36 mohair, 1134 ends; 20s reed, giving 56.7 in. inside selvages.

The Road to Standards

Proves shell-torn as last stretch toward dress-fabric tests is entered

THE most comprehensive single piece of standardization ever attempted by or for the textile industry reached a spirited climax on Sept. 27 in the East Room of the Hotel New Yorker, New York. There, under the auspices of the Division of Trade Standards, National Bureau of Standards, the "Proposed Commercial Standard on Testing and Rating Dress Fabrics" was laid open to whatever high-powered criticism the assembled gathering chose to fire at it. Staunch defenders were present, however; and, although the heat of argument was often intense and occasionally some poorly camouflaged epithets flew back and forth, the proposed standard came through with no serious scars—although with many changes. As a result, this important standard, thus far limited to testing and reporting, will be published shortly and, if approved by letter ballot, will become effective on Jan. 1.

The affair started quietly enough at 10 o'clock in the morning when I. J. Fairchild, chief of the Division, entered into his duties as chairman of the meeting, which was attended by mill men, dyestuff men, laboratory men and women, retail-store men and women, drycleaners, government representatives, and other interested parties or representatives of such parties—including particularly, it turned out, consumers.

The first amendments dealt with such relatively minor matters as specifying the temperature (90 to 100 deg. F.) for the rinsing water in the wet-cleaning procedure, the substitution of tertiary butyl alcohol for ethyl alcohol in the drycleaning solution, and the adoption of a new machine introduced by Ephraim Freedman of R. H. Macy & Co., New York, for the drycleaning test. This machine, incidentally, is an interesting device consisting of a small 3-gal. barrel tilted to an angle of 50 deg. to the perpendicular and rotated, either by hand or by motor, three and one-half turns in one direction and three and one-half in the opposite direction. It is to be loaded to a weight of 1 lb., including two test samples measuring 12x12 in. and additional pieces of fabric as ballast.

The first sparks flew over the seemingly impotent matter of adopting a nomenclature which would differentiate between cleaning without the aid of water and cleaning with the aid of water. One drycleaner went so far as to declare that he was opposed to the whole standardization movement because it tended to adopt meaningless terms and stir up controversies between cleaners and customers. It was suggested by other speakers that perhaps the drycleaners were reluctant to let their customers know that they use water in their processes; and, if that is the case, it was asserted, an educational program is needed to inform customers of the necessity for using water for certain types of cleaning. Finally all protests were outvoted in favor of the terms "cleaning dry" and "cleaning wet" (the latter distinct, of course, from "laundering").

It was to a considerable extent a drycleaning morning; and when the matter of reporting color fastness to cleaning was reached, it required only a few minutes before the original proposals were so battered that a special committee under W. D. Appel, of the Bureau of Standards, was hastily formed to thrash out the differences through the lunch hour. This the committee did admirably, and the test and report as now worded will show definitely to what extent the colors under test bleed to cotton, wool, silk, viscose, and acetate—important data where garments are made of more than one type.

The first new business of the afternoon session involved the discarding of the terms "good," "fair," and "poor" in the reporting of fastness to light and the adoption of the complete rating method standardized by the American Association of Textile Chemists and Colorists. Thus, interpretation of test results is now left to whatever parties may be doing business in the goods.

Late in the afternoon, when the long and strenuous conference had begun to produce a display of frayed nerves, the bitterest dispute of all arose. This was over the proposal of Claxton Munroe, of the American Woolen Co., that woolen and worsted goods be exempted from the tests for color fastness to perspiration. Representatives of the wool and dyestuff industries lined up solidly behind Mr. Munroe on the basis that it is practically impossible to produce marketable fabrics which will pass the tests. Representatives of the retail trade and of consumer organizations, equally unified, took the opposite stand on the basis that the tests are accurate and that the consumer is entitled to know whether any dress she buys is fast to perspiration. It was suggested that the test will lead to improved dyes.

On the motion of Dr. P. B. Mack, of the American Home Economics Association, the vote on this question was by roll call, with the business affiliation of each voter recorded. Even with the votes of the dyestuff men excluded (on the basis of their not being producers, distributors, or consumers of dress goods), the ballot stood for a time in favor of temporary elimination of the perspiration tests by a margin of one vote. However, a last-minute switching of a vote by the representative of a mail-order house served to retain this disputed portion.

A particularly notable result of the entire conference was a general elimination from most parts of the original document of such indefinite terms as "objectionable" and "satisfactory," with the result that test reports will sound more definite and the standard will actually prove more rigid. Some misgivings were expressed as to the danger of the increased rigidity depriving the consumer of many fabrics which would be found of sufficient quality to give adequate serviceability.

In spite of—and perhaps to some extent because of—the many controversies over details of the standard, it was generally felt that the conference was a success and an important step in the progress of standardization. The outcome was a credit, not only to the efficient management of the conference, but also to the three laboratories which prepared the original report. These were the United States Testing Co., Better Fabrics Testing Bureau, and Hatch & Reutlinger.

Latch-Needle Design

And the reproduction of designs on either latch or spring needles

By J. Frederick Cahill

◆ *In this article Mr. Cahill explains how the information he has supplied on spring-needle work in previous articles of his series on designing for circular knitting machines* can be applied to designing for latch needles. He shows clearly wherein the two systems differ. In addition he offers some pointers on analyzing designs and adapting them to at least approximate reproduction on whatever machines are at hand, whether latch- or spring-needle.*

THE same principles that apply to cut pressers for loop-wheel spring-needle knitting machines apply also to "pattern wheels" on latch-needle knitting machines of the jersey-stitch type—with a difference, however. The number of needles in each cylinder of the latter is fixed, and with one set of pattern wheels the design field is fixed as to width but may be varied as to height by the blocking out of feeds.

As a general rule pattern wheels have stamped on them the number of needles in the machine, the number of cuts or teeth in the wheel, and the number of needles in the design division. The number of design divisions in one wheel times half the number of feeds used equals the height of the design field. The rule for tuck courses in a design—i.e., divisions in one wheel times one-half the feeds—applies here as well as in the case of spring needles. By dividing the number of needles in the cylinder by the number of cuts or teeth in the wheel, it will usually be found that there is a remainder. The number of times that the wheel is wholly contained in the number of needles is not at all important; but the remainder is important, as it represents that number of needles which constitutes the "lap," usually equal to or a multiple of the number of needles in the design or of a horizontal repeat.

The actual knitting of a design or pattern into the fabric on a latch-needle machine is brought about by the same process as that employed on a loop-wheel spring-needle machine; namely, by means of a series of plain stitches and tuck stitches on needles in prearranged locations and in prearranged courses. Pattern wheels are sometimes cut in a manner similar to cut pressers with the necessary prints and cuts required to reproduce the design, and the effect is the same in both cases. Where prints occur, the wheel causes the corresponding needles to knit; and where cuts occur, the corresponding needles are prevented from knitting and hold their loops with the added tucked stitch to be cleared at the next feed.

The pattern wheels on modern machines, however, are made in such a manner as to permit the setting up in the wheels of any design that may be laid out in the design field for which the wheels are constructed.

The working circumference of the wheels proper consists entirely of cuts; and if placed on the machine in that condition, they would have no effect on the needles at all. To make them effective for the purpose of causing needles in prearranged locations to knit, they are provided with small units of metal (variously called "blocks," "jacks," or "plugs") which can be inserted into a cut and transform it from a cut into a print.

The units may be placed in any desired series or combination in the cuts of the wheel and located to suit the demands of the design; and they are held or clamped into position by means of a disk or ring screwed to the body of the wheel.

The wheels may be considered to have "divisions" which must read or count in the same manner as those in cut pressers, according as the lap is plus or minus. As in loop-wheel spring-needle machines, the direction or apparent direction of movement of the needles is the controlling factor in determining the direction in which the design divisions in the wheels should be numbered. A division of the cylinder by the wheel and a remainder of one design division would mean a plus lap, irrespective of the direction of motion of the needles, to either right or left.

The direction of motion of the needles nearest the operator in a latch machine, or the apparent direction, may be either right or left, though the needles very seldom actually move to the left. With the needle cylinder and the take-up as the rotating parts of the machine, the needles usually move toward the right in passing the wheels and yarn guides. With the cam ring and yarn stand as the rotating parts, the portion nearest the operator usually moves toward the right; and, in such case, the needles must be considered as moving to the left.

Transferring Designs

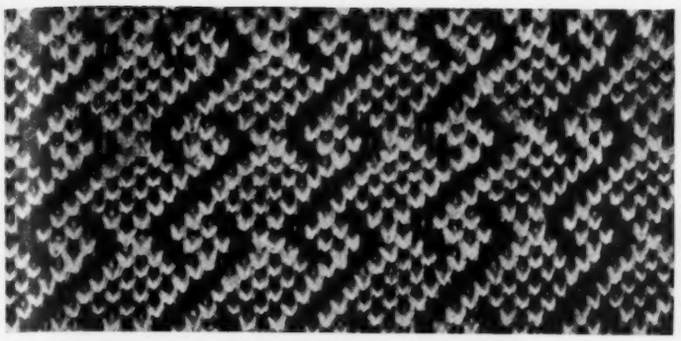
Once a design is laid out in the design field for any number of wheels, the design may be transferred directly to the wheels in the same manner as that employed in taking off a cut-presser diagram.

If a wheel contains five divisions of 24 needles each, its circumference would contain 5×24 or 120 cuts. Then, 1,176 needles divided by 120 cuts equals 9 with a remainder of 96, which is 4×24, or four of the five divisions, and shows a minus lap. The division shows that the wheel is contained in the cylinder one division less than a whole number of wheels and a minus lap. If the remainder had been 24, one division over a whole number of wheels, it would have shown a plus lap.

Assume that such wheels are to be used on a machine with the cam ring moving to the right and the needles apparently moving to the left. Then the divisions must read 5, 4, 3, 2, 1, as in plus lap on needles to right.

Starting at any point in the wheel, on the side away from the operator and working toward the left, the top line, or division 1 of wheel *A*, may be transferred by

*May 28 and July, 1932; February, April and December, 1933; June, 1934; and February 14, 1935.



beginning at the right and reading to the left, followed by the remaining divisions in the same order. With the design transferred to the wheels, the order in which the wheels are placed on the machine, in this case, should also read to the left, as *H, G, F, E, D, C, B, A.*

Because of the fact that fabrics knit on latch-needle machines of the jersey-stitch type are usually of such a nature that a mixed field of two colors is undesirable, the designs are most frequently of small figures quite close together. This practice makes it possible to present a field of solid color and float the yarn across the back of the figure while the yarn of which the figures are knitted is floated from figure to figure on the back of the fabric, which is on the inside as the knitted cloth moves downward to the take-up.

Set up in wheels as described above, and the wheels placed on the machine in their proper order, the design will appear on the outside of the fabric inverted, but not reversed, as compared to the design on paper. The change in the position of the figure in the design column due to the number of feeds will cause it to appear to have moved upward to the right instead of downward to the right, as would have been the effect on a loop-wheel machine with the same lap and needle direction. On both types of machines the apparent displacement of the figure in the fabric is toward the needles, due to each figure having been started one revolution of the cylinder later than its neighbor next farther removed from the needles.

As mentioned previously, if the take-up on a sinker-top or open-top latch-needle machine, with the cam ring moving to right and wheels with a minus lap, were loosened and the fabric drawn up from the inside and spread with the hands, it would present the same appearance as a fabric of the same design on a loop-wheel machine with the needles moving toward the left and pressers with a minus lap, because the movement of the cam ring to the right is equivalent to a movement of the needles toward the left.

Analyzing Designs

Knitters with a thorough understanding of the effect of needle direction, the number of feeds, and the lap in wheels and pressers on the design should have no difficulty in analyzing designs in fabrics that come to hand and adapting them, with allowances, to their facilities.

It is evident to any experienced knitter that the raw edge of a swatch of fabric that ravels most freely is that edge which left the needles last. With the freely raveling edge downward and viewed from the back, the sample would present the same appearance as it would in the fabric on a loop-wheel machine. Such observation would not serve to show the direction of motion of needles in the machine on which the sample was made, but it would show which lap would be required to reproduce such a fabric on the equipment at hand.

Exact reproduction is not always possible, but sometimes approximation of the design may serve as well.

Designs on sample swatches are usually sufficiently distinct on the face side to permit of counting wales if not the courses; and as the adaptation of a design to the facilities at hand is largely a matter for judgment on the part of the knitter, the exact count is sometimes not necessary. Judgment must be used in determining which gage of needles and what size of yarn to use in reproducing the fabric; and the chance of error in counting wales and courses is no greater than the chance of error in selecting gage and yarn—not so great, in fact, if the swatch ravels easily. This writer prefers to count wales and courses in place in the fabric, rather than ravel and count as is advised in some cases.

Before attempting to analyze a design, a knitter should have a record of the number of needles in each cylinder for latch needles that he has on hand, and the possible number of needles in each gage that can be used in each size cylinder for leaded needles that are on hand.

A design stretched on a board, face up with the freely raveling edge nearest the observer, and held in place with thumb tacks, offers a very good opportunity to determine the points of information necessary for reproduction or adaptation of the sample.

If a sample ravels freely, the stitches usually are distinct enough to count; and a count of the number of tuck courses that intervene between a course that coincides with the top course in one figure and one that coincides with the top course in the figure next below (to right or left) will indicate the number of feeds employed, twice the number of tuck courses, as the number of tuck courses would indicate the number of cut pressers or pattern wheels used if alternated with plain feeds.

With the number of cut pressers determined, a count is made of the vertical repeat (in tuck courses) which, divided by the number of pressers, shows the number of divisions in each presser. A count of the horizontal repeat from any wale in one figure to, but not including, a corresponding wale in a figure to right or left shows the width of the design field and the presser divisions.

With the information gathered from the analysis of the design jotted on a sheet of design paper, it remains to be seen which cylinders are amenable to the knitting of the design.

Are they large enough to accommodate the necessary number of feeds?

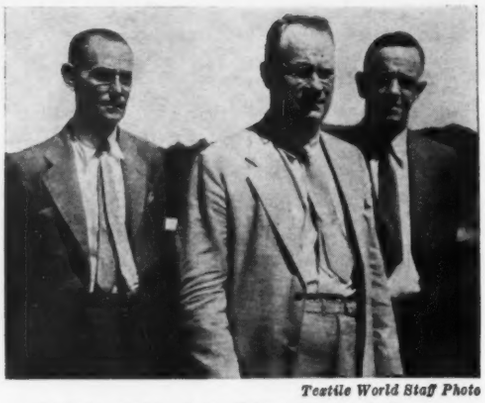
Will the number of needles divide into a number of design columns that will enable pressers with the necessary number of divisions to divide into the needles with a remainder of one division over or under a whole number of pressers? This may be determined by factoring the number of needles in several sizes of cylinders.

If a cylinder or cylinders with needles that will divide into the required design divisions cannot be found, it may be that cylinders are available which have a number of needles that will permit of divisions one or two needles wider or narrower than that employed in the sample. The extent to which liberties of this nature may be taken usually depends upon the design width or horizontal repeat. A wide design offers greater opportunity for variation in needles than a narrow design, while a high narrow design would show less in an alteration of the number of courses.

Specific instances of what might be done in the line of design adaptation cannot be shown adequately here.

Georgians and Alabamians

250 strong, meet at Atlanta to discuss slashing and weaving



Textile World Staff Photo

Left to right: J. C. Edwards, elected general chairman; V. J. Thompson, vice-general chairman; Allen Jones, who led the weaving discussion.

MORE than 250 superintendents and overseers, including about 25 members from Alabama and 30 others in attendance for the first time, heard slashing and weaving problems discussed at the fall meeting of the Textile Operating Executives of Georgia, held Sept. 28 at the Georgia School of Technology in Atlanta. J. C. Edwards, superintendent of Martha Mills, Thomaston, presided.

The slashing discussion was led by V. J. Thompson, superintendent of the Manchester plant of Callaway Mills. The first question involved a lengthy discussion of results which might be expected from removing the hood ordinarily located over slashers. Allen Jones, superintendent of Muscogee Mfg. Co., Columbus, started the ball rolling by declaring that he has been operating slashers without hoods for a long time with good results. The reason, he pointed out, is because his slasher room has a 15-ft. ceiling and four ventilators with 36-in. fans. A number of other members admitted that they had removed the hoods without harming ceilings or yarn. (In each of these cases the slasher room is located near the top of the mill or has a special system of ventilation.) One or two, with slasher rooms less favorably located and equipped, said that removal of the hoods has resulted in rotted ceilings and stained goods from condensation drip.

Regarding squeeze-roll covering, Johnston McCorkle, superintendent of Hartwell Mills, Hartwell, asserted that the blanket material used as a cushion on his squeeze rolls lasts approximately 180 hr. He puts new blankets first on the back roll and covers them with cotton sheeting. Becoming pliable after a time, the new blanket is put on the front roll with the old blanket on top. At Fulton Bag & Cotton Mills, Atlanta, slasher cloths usually last about 30 days when the mill is operating 60 hr. per week. Consensus was that slasher cloths should not be removed over the weekend, should be soaked when necessary in order to retain pliability, and when new should *always* be placed under the old cloth.

Slasher speeds in Georgia mills average 30 to 35 yd. per minute on 25s to 30s warp, 2,000 to 3,500 ends, with controls on size box and kettle. The highest speed reported, 65 yd. per minute, is run regularly at Chicopee Mfg. Co., Gainesville, according to Harry Purvis, superintendent. This is on fine yarn, 550 ends, with controls on size box. Sets are kept from stealing or rolling by means of half-moon shaped pieces of wood.

With reference to variation in number of cuts or yards from various sets, A. D. Elliott, superintendent of Trion Co.'s cotton mills, Trion, reported a variation of 148 to 150 cuts on 8s warp, 10,000 yd. per set, and a variation of 460 to 467 cuts on 32s warp, 30,000 yd. per set. He suggested that this stretch, averaging 1 to 2%, might be caused by too much tension on the creel beam, by too much covering on the front roll, or by any number of other factors. R. W. Jennings, superintendent of Lanett (Ala.) Mill of West Point Mfg. Co., West Point, reported variations of 0.7 to 1.4%, and suggested that ball bearings in the creel and a fiber washer against one beam might tend to keep down superfluous stretch.

Consensus was that from 6 to 8% moisture and from 9 to 10% solids should be left in yarn after slashing.

The weaving discussion was led by Allen Jones, of Columbus, and the first question dealt with the best methods of holding weave-room temperatures at a minimum during hot weather. Three ways of controlling these temperatures are by properly opening windows, by installing air-conditioning equipment, and by regulating the temperature of the water which goes into the humidifiers. It was agreed unanimously that weave-room windows should be opened only at the top during the summer months. Mr. Edwards described an installation of commercial air-conditioning equipment at Peerless Cotton Mills, Thomaston, which he asserted is doing an excellent job toward lowering almost unbearable weave-room temperatures. Another member declared that by raising the temperature of the water in his humidifiers he can lower the weave-room temperature below the outside temperature. The theory is that warm water tends to evaporate more quickly and cool the atmosphere.

An orthodox discussion of shuttle life took place, and it was agreed that a shuttle might last from 30 min. to several years. The highest average figure was reported by Mr. McCorkle—7,200 loom hours on 40-in. sheetings with the loom running 160 picks per minute.

Cloth woven by first-shift weavers, it was reported, can be distinguished from that woven by second-shift weavers by means of colored threads in the last pick, by letters or numbers stamped on the back, or by adhesive tape bearing the name of the weaver.

Oiling of looms is done in some mills by special oilers, in others by loomfixers, and in a few by the weavers themselves.

Uneven tension on filling caused by short bobbins was thought to be a possible reason for streaky effects (filling bars) in high-pick goods at the shuttle change.

The executive committee, which met the night before the general meeting, selected J. C. Edwards to serve as general chairman during the next year. V. J. Thompson was made vice general chairman, while C. K. Cobb, buyer for Canton Cotton Mills, Canton, was placed on the executive committee, to succeed Mr. Thompson.

Desizing Agents . . .

Factors which influence results obtained with four types of enzymes

MORE important than their name implies, the desizing agents are used, not only as such, but also in sizing, printing, and finishing. Two classes of desizing agents are in common commercial use—the enzymes and chemical compounds such as sodium paratoluenesulphochloramide. The present compilation will be limited to the enzymes and their use in desizing. The chief aims will be to correct some misapprehensions concerning the enzymes and to point out the various factors which influence the results obtained with these materials.

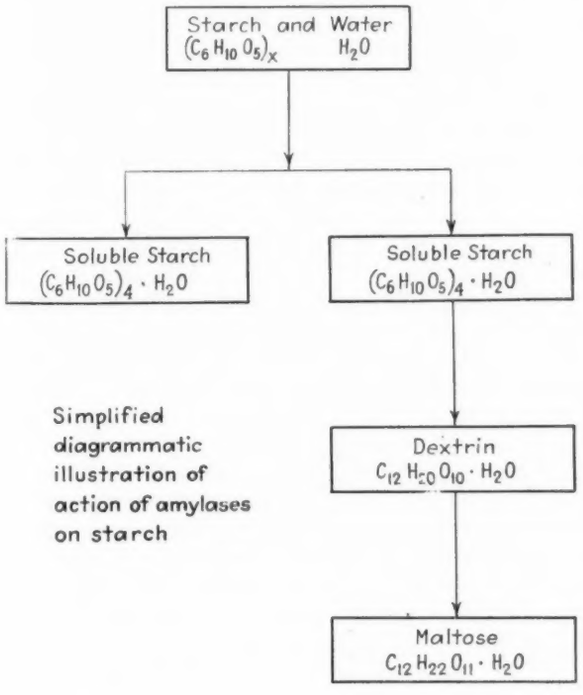
There are four types of enzymes offered commercially as desizing agents: (1) malt enzymes, (2) animal enzymes, (3) bacterial enzymes and (4) fungus or mold enzymes. The enzymes are complex nitrogenous colloidal compounds, each of which has a specific catalytic action. They are not living bodies, as some have supposed, although they are produced only by living bodies. None of those used in desizing have been crystallized in their pure states. Each of the commercial products is believed to contain at least two amylases (starch-splitting enzymes), and many preparations also contain one or more proteases (enzymes which act on proteins). Some products also contain cytase, an enzyme which attacks the wall structure of the starch granule.

Conversion of Starch

As there is still some question as to the exact structure of the starch molecule, it is not surprising that the action of enzymes on starch is not yet clearly understood. For practical purposes, however, we may consider that when starch is subjected to the action of a commercial enzyme, part of the starch is converted into so-called soluble starch, in which state it remains, and part is converted first into soluble starch, then into dextrin, and finally into malt sugar (maltose). Conversion into soluble starch is commonly referred to as "liquefaction" and conversion into maltose is called "saccharification." The rate of reaction is directly proportional to the concentration of the enzyme (up to a certain point), but the total amount of action is independent of the amount of enzyme, provided sufficient time is allowed to elapse and provided also that the enzyme is not decomposed by other means. Some investigators state that enzymes are relatively unstable products; and if only a small amount of enzyme is used, the reaction slackens and finally ceases, owing to decomposition of the enzyme before all the starch is reacted upon. They say also that the products of the reaction have an inhibiting effect on the enzymes, and thus tend still further to retard the speed of the reaction.

Others state that heat will decompose the enzymes, but maintain that overwork does not stop enzyme action and point out that 1 lb. of amylase will liquefy 25,000 lb. of starch. The need for further study of the action of enzymes in standing baths is indicated by this divergence of opinion.

While the various types of enzymes used in desizing have many points of resemblance, each differs from the others both in its effect and in its optimum conditions of use. It is important, therefore that the mill man be familiar with these distinctive properties if he is to use the enzymes to the best advantage.



Simplified diagrammatic illustration of action of amylases on starch

Types of Enzymes

Malt enzymes, as the name implies, are obtained by extraction from freshly germinated malt. They contain a mixture of amylases and proteases and have a high saccharifying power, at room temperature converting about 81% of the starch all the way into maltose and liquefying 19% into soluble starch. Their action is slow at low temperatures, increases rapidly to about 50° C., remains fairly constant to about 63° C., diminishes up to 80 to 81° C., at which point the enzyme is destroyed. The nature of the reaction changes at 55° C., the enzyme losing its power to transform as great a proportion of solubilized starch to maltose at higher temperatures. A temperature of 70° C. is the best for liquefaction, but little maltose is produced at that temperature. For desizing the optimum temperature is 65° C. at pH 5 and falls rapidly at either side, although the fall is less marked toward the neutral point. Common practice is to apply malt enzymes in a neutral solution, but it should prove well worth while to adjust it to the optimum point. Addition of disodium phosphate and certain other chemicals is said to result both in an increased initial acceleration of the reaction and in an increased total activity. So far as is known, however, this has not been tried in

textile mills. Salicylic acid, formaldehyde, zinc chloride, etc., destroy the malt enzymes or inhibit their action.

Animal enzymes are prepared from the pancreatic glands of animals. They contain amylases, proteases, and small amounts of lipases (fat-splitting enzymes). Like the malt enzymes, their saccharifying power is high. The greatest activity takes place at about pH 6 to 7; below pH 2 and above pH 10 the enzymes are inactive, but regain their powers if the pH of the solution is brought back to neutral. The working range is from 40 to 60° C., the optimum temperature of application being about 40 to 50° C. However, the enzyme is rapidly destroyed at higher temperatures if used alone, and, for this reason, a protective or stabilizing agent—such as sodium chloride, sodium sulphate, or sodium phosphate—is used. With the protective agent the enzyme is active at 55° C. but at 60° C. is slowly destroyed. Electrolytes—and particularly calcium and chlorine ions—have a great effect on the animal enzymes. Common practice is to apply them in a solution containing ¼% of salt and about 40 to 50 parts per millions of a soluble calcium salt. If softened water is used, this amount of lime may be added. As this type of enzyme is very sensitive to temperature variations, strict control of this factor is necessary if an unbuffered product is used.

The bacterial enzymes are produced by growing pure cultures of certain micro organisms in sterilized wort. The commercial preparations contain both amylases and proteases. Their saccharifying power is less than that of the malt enzymes or the animal enzymes, but they have a greater liquefying power, act more quickly at the concentrations ordinarily used in desizing, and are less sensitive to temperature changes. They are active at temperatures ranging from 25 to 90° C. in slightly acid, neutral, and weakly alkaline solutions. For desizing, the optimum temperature is 70 to 75° C. at pH 7 to 7.5. Usual practice is to apply the enzyme in a solution containing 0.03% of soda ash and 0.5% of salt. At temperatures below 70 to 75° C. it is not necessary, as a rule, to adjust the pH or to add activating salts.

Fungus or mould enzymes are prepared by inoculating cereal media with a pure culture of a fungus and extracting the enzymes. The enzymes have a high liquefying and low saccharifying power—7 to 1 to 9 to 1. These enzymes are active from pH 2 to pH 8 and up to a temperature of 82° C. The optimum temperature of application is 55° C. at pH 5.4. Certain phosphates and sulphates increase their activity, but they are not affected by metallic chlorides.

Plant Trial Best Evaluator

One point which should be mentioned in conclusion is that at present there is no satisfactory and convenient laboratory test which can be used as a guide in the selection of a specific type of enzyme for use in desizing. It is possible to measure the liquefying power or the saccharifying power, or both; and such determinations are of value in comparing the strength of two or more lots of the same type of enzyme. A plant trial under carefully controlled conditions is still the best basis on which to judge whether or not a particular preparation will give the results wanted.

A subsequent article will discuss the use of the enzymes and other desizing agents in sizing, printing, and finishing.

Power Plant

What the increase

By Robert L. Rowan,
General Coal Co., Philadelphia

EVAPORATION in pounds of water per pound of coal is limited entirely to what takes place in the boiler room and is dependent upon the character of coal used; the type and condition of boiler, furnace, and fuel-burning equipment; and the operating efficiency of the boiler room personnel. The pounds of coal per kilowatt hour is an over-all result of the combined efficiencies of the boiler room and the turbine room. Proper operation of the turbine is of utmost importance, but in most plants the efficiency of the turbine is governed in large measure by factors beyond the control of master mechanic. On the other hand, when the master mechanic steps into the boiler room, he generally finds that there is opportunity for considerable improvement.

There are a number of chemical and physical properties of coal which affect the performance of the plant, and the selection of coal to meet a given set of operating conditions is not an easy task. The complexity of this problem is indicated by Table I, in which are listed the properties of coal which vary among different producing areas, different seams of coal, and different mines. The individual plant will determine which of these properties are of importance to it. This will depend upon the equipment and operating conditions; therefore in one plant some of these properties may not be important, while in others these same properties may be of the utmost importance.

Coal-burning equipment may be classified as: (1) hand-fired, (2) stoker-fired, and (3) pulverized-coal. There are numerous variations in detail in the equipment available under each of these broad classifications. In addition, any two plants though identical in coal burning equipment, may vary in one or more of the characteristies listed in Table II. These variables will affect furnace or fuel-bed conditions by determining the rate of fuel feed, temperature of fuel bed, temperature of furnace, length of flame travel, and the heat release (B.T.U. per cu.ft. furnace volume per hour). Depending upon the particular combination of these factors in a given plant, coal qualities may limit the efficiency, operating costs, and capacity.

Value of Coal

It has been said that the best way of determining the relative value to any plant of a particular coal is by trial of that coal in the plant. It is, of course, possible that the facts derived from such trials, together with a knowledge of the chemical, physical, and burning characteristics of the coal can definitely determine the most economical fuel to use. There are pitfalls, however, to this type of test, as it is apparently quite conclusive. Even under the most favorable conditions, there is a probable error of at least 2%, and probably the majority of coal tests by this method are conducted under conditions with an error twice as great. In many cases trials

*Abstract of paper delivered at fall meeting of Master Mechanics Division of Southern Textile Association, held Sept. 20, in Gastonia, N. C.

Performance

master mechanic can do to the efficiency of the boiler room

are made without instruments for accurately measuring the steam generated and the coal burned and depend entirely upon personal observation. Such tests are incapable of disclosing a difference in value of as much as 10%, and yet that is equivalent in many places to about 50c. per ton. On the other hand, a small actual difference of only a half pound in evaporation can mean several thousand dollars in the average annual fuel bill of even a comparatively small plant.

Underfed Stokers

In view of the predominance of the underfed type of fuel burning equipment in general use, it will not be out of place to discuss this particular type of equipment in some detail. In my opinion the four most important characteristics of a coal governing the application to stokers of this type are: (1) fusion temperature of the ash, (2) ash percentage, (3) coke or caking characteristics, (4) ease of ignition or ignition temperature. At this time I shall discuss only the coking or caking characteristic.

Some coals form large, porous coke masses which are easily broken up; some form hard, dense coke masses that require considerable agitation to break up; some form friable masses that are easily blown off the grate, causing excessive combustible carry over. Furnace conditions frequently affect the above actions, irrespective of the natural tendency of the coal itself. Pre-heated air on the one hand, water walls on the other, also affect these actions. Coals with an excessive percentage of superfines, will be conductive to strong coking action in the fuel bed, resulting in uneven fires and frequently reducing thermal efficiency and at times even accounting for excessive clinker trouble.

Efficient daily operation of the steam plant can be more easily controlled if the losses that occur during operation are measured, recorded, and studied. Of course the variation in losses accounts for the variation in evaporation, and in this way those factors which affect evaporation can be controlled. Losses to be studied for control purposes can be measured by the percentage of CO_2 in the flue gases and the flue-gas temperature.

The temperature of the flue gases is influenced by the cleanliness of the boiler both inside and out, the design of the boiler and baffle arrangement, the condition of baffle, and to some extent by the percentage of CO_2 present. Percentage of CO_2 is affected by the even distribution of air through the fuel bed which is caused in part by the burning characteristics of the coal, proper control and adjustment of drafts, and the efficiency of the fireman in maintaining an even fuel bed. Each individual plant with a given coal will disclose upon proper study, a certain maximum CO_2 that it is possible to maintain, and any variations in this figure should be studied and the cause thereof eliminated. Flue temperatures can be controlled by keeping the surfaces of the boiler—inside and out—clean and the setting and baffles tight. Tube slagging may be an added feature which affects flue gas temperatures, as well as the capacity and efficiency of the boiler in general. If there is any tendency for the tubes to slag, this slag should be removed periodically with hand lances or other mechanical means.

If a careful and conscientious study of the losses taking place in daily operation are carefully noted, studied, and corrected as far as possible, the average efficiency of the boiler will be materially increased. For the measurement of these losses a recording flue-gas thermometer and recording CO_2 instrument are necessary. For correcting the losses indicated by these instruments, draft gages, suitable observation doors of the furnace, and the proper training of the boiler room personnel are essential.

In pulverized-fuel firing, one encounters the necessity of studying different coal characteristics from that of stoker firing. Here grindability and ease of ignition, along with percentage of ash and fusion temperature of the ash, are generally the most important characteristics. Mill capacity, maintenance, and power requirements are dependent upon the grindability of the coal and, with some makes of pulverizers, this dependency is much more pronounced than others. The type of furnace in which pulverized fuel is burned, along with load, determines in a large measure the requirements as to ash percentage and ash-fusion temperature. With furnaces of ample water-cooling surface, coals of quite low fusion temperature are being satisfactorily used; where these furnaces are equipped with suitable ash-handling equipment, coals with ash percentages somewhat higher than the average can be used, which, of course, has nothing to do with the relative economic value of the high-ash and low-ash coals.

TABLE I. Chemical and physical properties of coal which affect efficiency, capacity, and operating cost of the steam plant.

1. B.T.U.'s (as shipped and as fired).
2. Moisture per cent.
3. Ash per cent.
4. Sulphur per cent.
5. Volatile per cent.
6. Hydrogen.
7. Fusion temperature of the ash.
8. Size.
9. Grindability.
10. Friability.
11. Coking or caking characteristic.
12. Character of clinker formed.
13. Ignition rate of the coal.
14. Uniformity of the above characteristics.

●

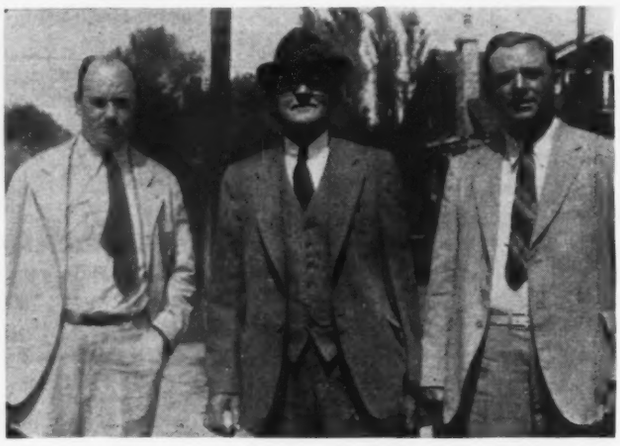
TABLE II. Variables in plant characteristics which influence efficiency, capacity and operating costs.

1. Size or shape of furnace.
2. Amount and kind of water cooling surface in the furnace.
3. Available draft.
4. Amount of heating surface exposed to radiant heat.
5. Maximum load.
6. Duration of maximum load.
7. Character of load.
8. Coal handling and storage facilities and requirements.
9. Spare units available.
10. Competence and adaptability of boiler room personnel.
11. Air-cooled walls.
12. Preheated air.

Coal, Steam, and Drives

Discussed by master mechanics at Gastonia

POWER plant and transmission problems were discussed at the fall meeting of the Master Mechanics Division of the Southern Textile Association held Sept. 20, at Gastonia, N. C. L. W. Misenheimer, chairman, presided, and Robert L. Rowan, fuel engineer, General Coal Co., Philadelphia presented a technical paper on evaporation and its relation to efficient power plant operation. M. L. Kinkaid, master mechanic, National Weaving Co., Lowell, N. C., was elected chairman to serve during the next year.



Textile World Staff Photo

Robert L. Rowan, speaker; L. W. Misenheimer, retiring chairman, and M. L. Kinkaid newly elected chairman at the Gastonia meeting of the Master Mechanics Division of the Southern Textile Association.

Chairman Misenheimer, who is master mechanic at Southern Bleachery, Inc., and Piedmont Print Works, Taylors, S. C., opened the meeting by asking "How many pounds of steam are generated per pound of coal?" C. G. Spencer, of Union Bleachery, Greenville, S. C., replied that this depends on the type and condition of the plant in question; in a modern power plant evaporation may be 12 to 15 lb. steam per pound of coal; in an obsolete plant it often is as little as 6 to 7 lb. At Union Bleachery, where fire-tube boilers and fire furnaces are in use, evaporation is 9½ to 10 lb., he said.

It was then asked in how many plants feed water is consistently 212° F. or better. Five members signified that feed-water temperature in their plants is 212° F. or better. Mr. Misenheimer proceeded to explain that when the temperature of feed water drops too much production of steam per pound of coal is decreased. He followed this up by producing a chart from a recording instrument in his plant showing a constant feed-water temperature of 212 to 228° F., which he asserted is maintained 24 hours per day from Monday to Monday. About 68½% of his make-up water, he reported, is reclaimed from condensation in the various processes throughout the plant. This enables him to evaporate 8.92 to 10.36 lb. steam per pound of coal in the bleachery power plant, and 11.50 to 11.75 lb. in the print-works boiler room. Most of this condensate returns at a temperature of 150° F., while the remainder is about 100° F. S. K. Lineberger, master mechanic, Industrial Cotton Mills, Rock Hill, S. C., reported that his feed water is kept at a temperature of 250 to 255° F. by means of a heater, located about 12 ft. above the pump, with a back pressure of 15 lb. Temperature of the condensate from the slashers at Industrial Cotton Mills averages 200° F.

In reply to the question "Do you use condensate in your feed water from dry cans and is there ever any oil in it?", Mr. Spencer stated that he uses condensate from 400 dry cans and never has found any oil in it. This is because the journals are always packed carefully, he added, and because there is a certain amount of steam pressure which tends to hold them in place. Another member asked if the partial vacuum in slashers would draw grease and oil into the can, and was told that on most cans there are two valves to prevent can collapse which also prevent this.

At this point Mr. Rowan read his paper on evaporation of water per pound of coal and pounds of coal per kilowatt hour, an abstract of which appears on page 90.

John W. Fox, of Duke Power Co., Charlotte, N. C., contributed a number of interesting facts relative to pounds of coal burned per kilowatt-hour. He said that the usual method of determining this factor is inadequate, since the mill is running only part of the time and overhead or fixed expenses are not included in the calculations. The president of a mill, he said, is not interested in pounds of coal per kilowatt-hour; instead, he is interested in kilowatt hours per pound of goods; or in dollars-and-cents power costs per pound of goods.

Consideration of Drives

Consensus was that individual drives cost considerably more to operate than group drives. However, where flexibility is desired, such as in mills making hosiery yarns, this added power cost is more than offset by the economy of quick changes.

In line with this consideration of drives, the representative of a mill spinning 86 different numbers from 4s to 100s reported individual drives in his plant to be indispensable. It was agreed, however, that a four-frame group drive is preferable in mills producing yarns within a narrow range of numbers requiring few changes.

As to V-belt versus flat belt, Mr. Kinkaid reported that, in a certain department of his mill, 48 V-belts lasted from three to four years, whereas flat belts on the same machines had never lasted over nine months. In contrast to this, Mr. Misenheimer declared that maintenance of a number of V-belts for a period of four years cost $224, whereas maintenance of a corresponding number of flat belts amounted to only 5 gal. of belt dressing for the same period.

As the meeting adjourned, Mr. Misenheimer handed out printed tables showing the cost in cents of steam per 1,000 lb.

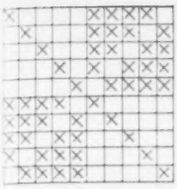


FIG. 1

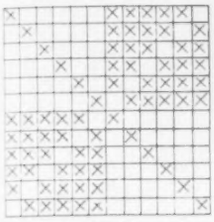


FIG. 5

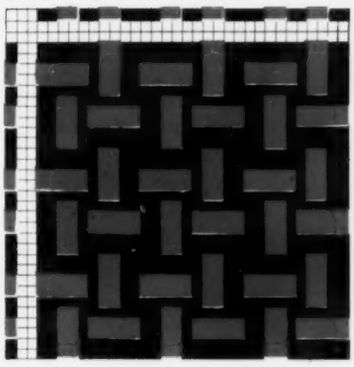


FIG 2

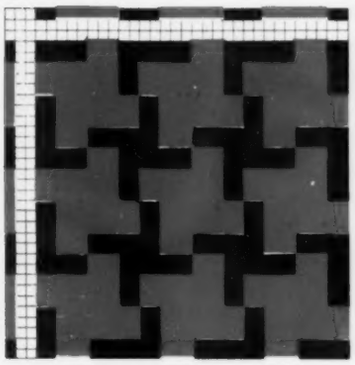


FIG. 3

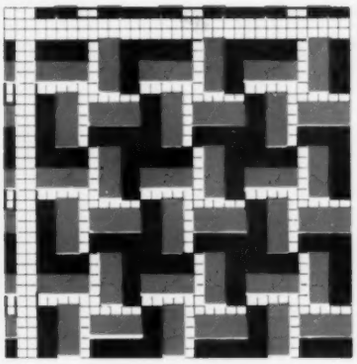


FIG. 4

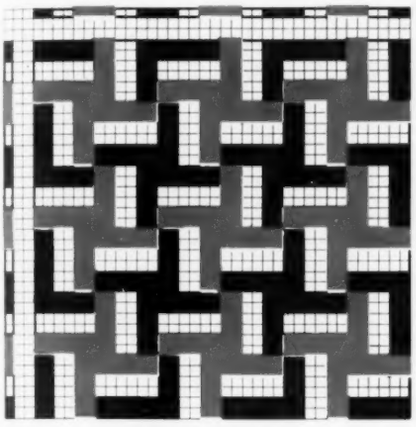


FIG. 6

Color in Weave...

Twenty-six effects from various fancy weaves, and seventeen from 4/4 twill

By T. R. Hart

Associate Professor, Weaving and Designing
North Carolina State College

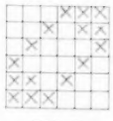


FIG. 7

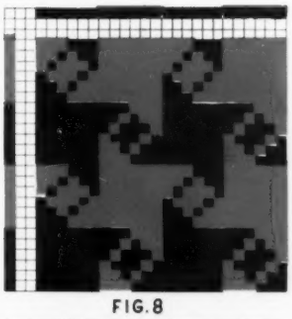


FIG. 8

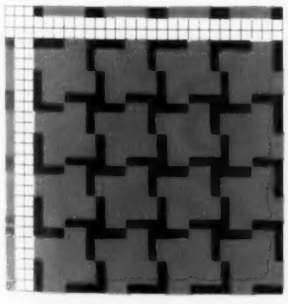


FIG. 9

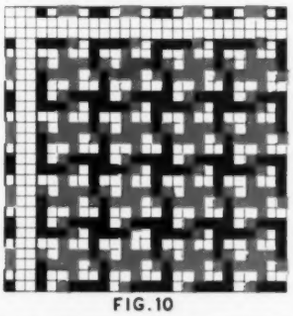


FIG. 10

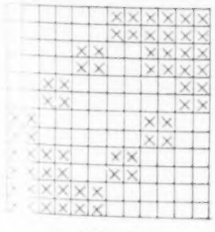


FIG. 11

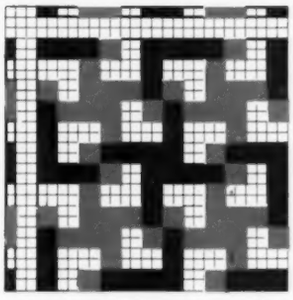


FIG. 12

IN concluding an article in the August, 1934, issue of TEXTILE WORLD entitled "Juggling the Colors," I stated that at a later date, the editor willing, I would show some of the color effects obtained by applying various systems of color to fancy weaves.

In this article I shall pick out a few small weaves and show the color effects obtained by applying various regular and irregular simple colorings to them. The single lines above the color effects indicate the coloring of the warp, while the single lines at the left show the way the filling is inserted.

The small ten-harness weave at Fig. 1 is the basis for the color effects at Figs. 2, 3, and 4. Fig. 5 is the weave for Fig. 6, and this weave could be effectively used with any of the following three warp and filling layouts: 2 black, 8 red, 2 black; 3 black, 6 red, 3 black; and 3 black, 2 red, 2 white, 2 red, 3 black.

The small six-harness weave at Fig. 7 is the basis for Figs. 8, 9, and 10. The latter effect could not be obtained

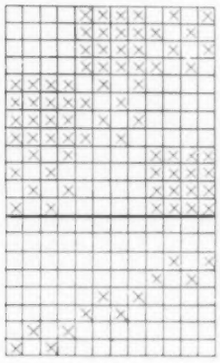


FIG. 13

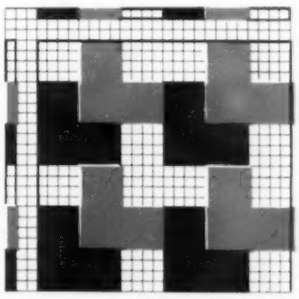


FIG. 14

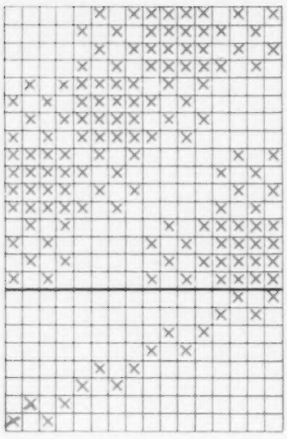


FIG. 15

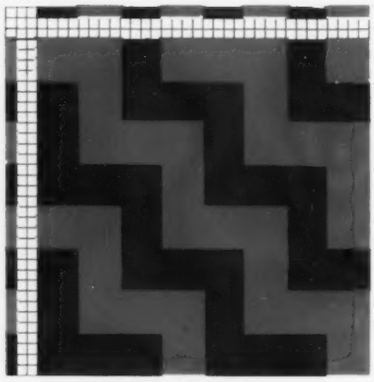


FIG. 16

on an ordinary drop-box loom; but by the use of two ends as one and the insertion of two picks in each shed, a similar effect, twice as large, could be produced. Fig. 11 shows the weave which would be used, and Fig. 12 shows the color effect which would result if this were done. Fig. 13 is the weave of Fig. 14; and Fig. 15 is the weave of Fig. 16.

Eight-and-eight colorings yield a variety of effects when applied to small weaves, as illustrated by Figs. 18 and 20, which are based respectively on the weaves at Figs. 17 and 19. Figs. 21 to 26 inclusive show other weaves which yield attractive patterns when eight-and-eight colorings are used. If these weaves are changed to correspond, six-and-six and ten-and-ten colorings can be used with them.

Seventeen Effects from One Twill

Recently, while discussing color effects with my classes, I became interested in seeing how many worth-while

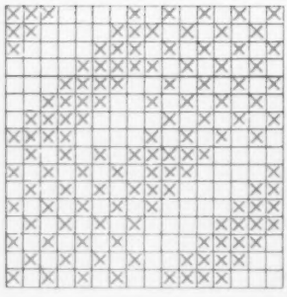


FIG. 17

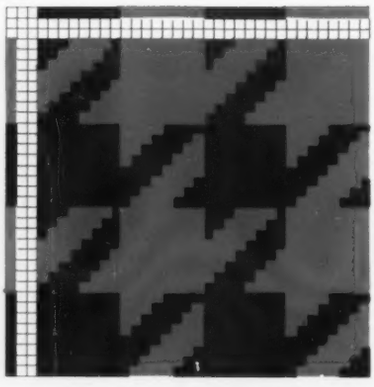


FIG. 18

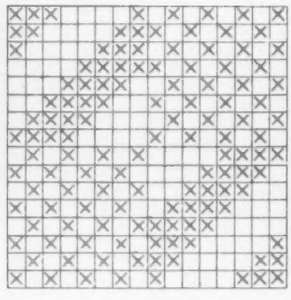


FIG. 19

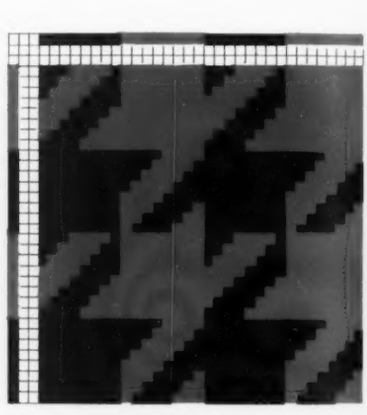


FIG. 20

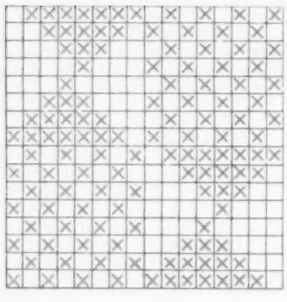


FIG. 21

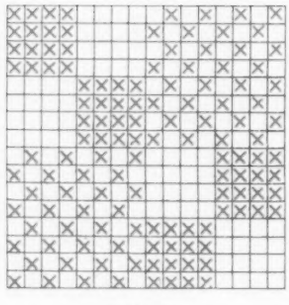


FIG. 22

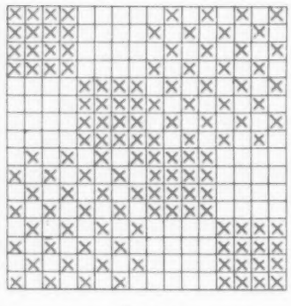


FIG. 23

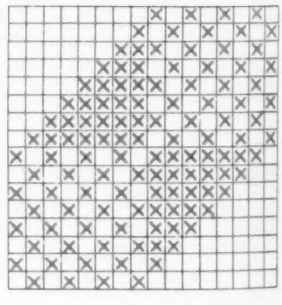


FIG. 24

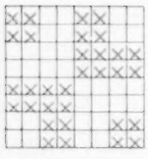


FIG. 25

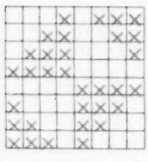


FIG. 26

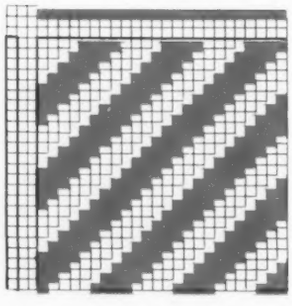


FIG. 27

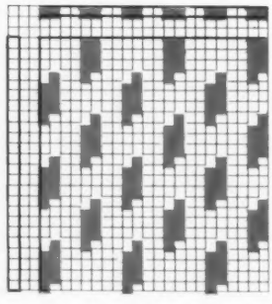


FIG. 28

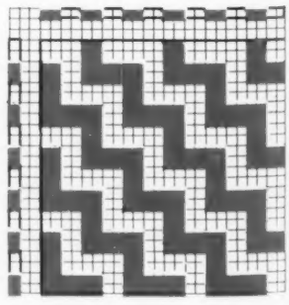


FIG. 29

color effects could be made from a given weave. Take, for instance, the ordinary 4/4 twill. Naturally, I knew that four-and-four or eight-and-eight simple colorings were often applied to this weave, but I was really surprised at the number of good color effects which I found I could obtain from it. Seventeen of these are shown as Figs. 27 to 43 inclusive, and they do not exhaust the list. All can be woven on drop-box looms. The use of pick-and-pick looms, which would permit odd-numbered thread combinations, would make numerous other effects possible—as would also the use of more colors. Fig. 27 represents both the 4/4 twill weave and the effect of using a colored warp with a white filling.

If designers will spend some of their spare time ascertaining the color effects which can be obtained by applying various color combinations to twills and other common and fancy weaves, I feel sure that the variety of patterns found in suitings, coatings, and so on, will be considerably increased.

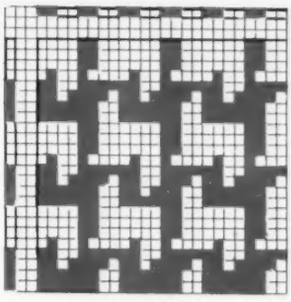


FIG 30

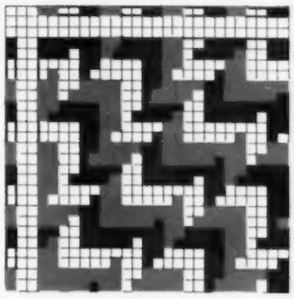


FIG. 31

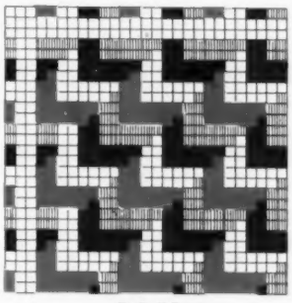


FIG. 32

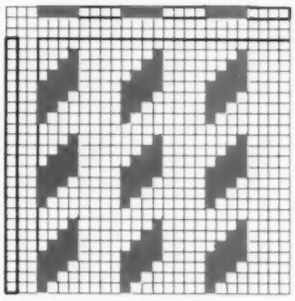


FIG. 33

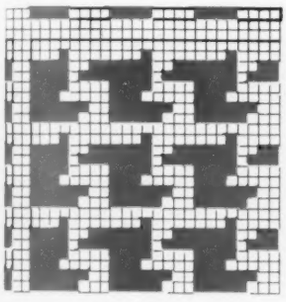


FIG. 34

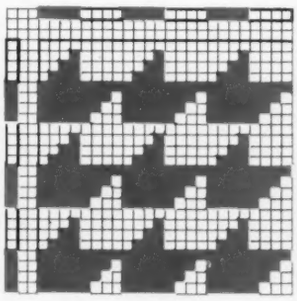


FIG. 35

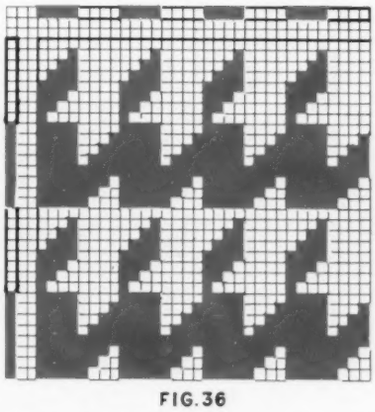


FIG. 36

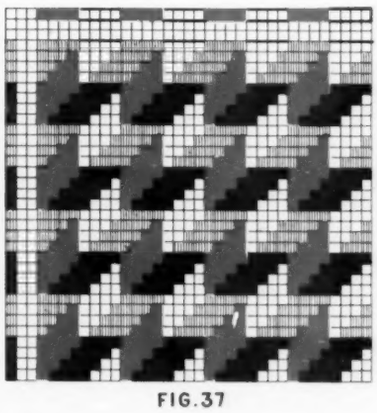


FIG. 37

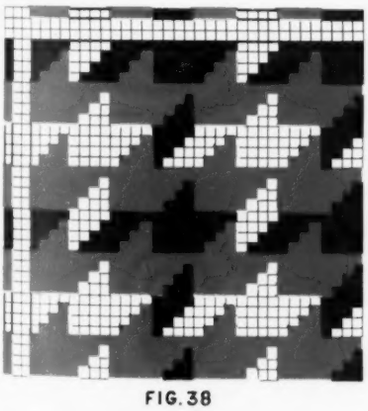


FIG. 38

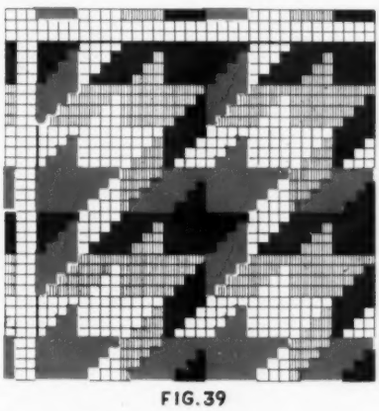


FIG. 39

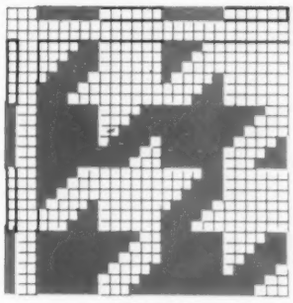


FIG. 40

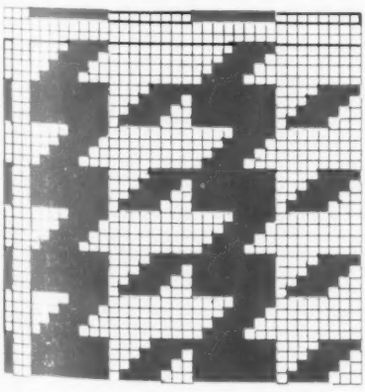


FIG. 41

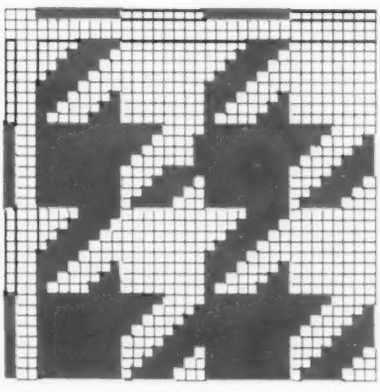


FIG. 42

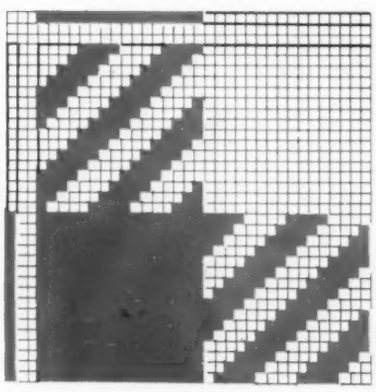


FIG. 43

1

2

3

4

Color in Wool Goods . . .

By Minna Kalt Carothers
Publicity Director, Associated Wool Industries

Women can now be as gay in wool as in other fabrics

"COLOR has a future." This statement was the slogan of the recent Fashion Futures of 1935 program—held at Hotel Astor, New York, by the Fashion Group of New York. The four "Future" colors accented by them as being the key shades for immediate acceptance are Future Green, Future Red, Future Blue, and Topaz, all interestingly different.

Many interesting shades for wool have been introduced this year. One reason for this, according to early season fashion prediction, was the entrance of the fur jacket and cape into the fall fashion picture. This, of necessity, made wool the acceptable and necessary fabric for dress wear. Many women failed to realize that they could be as gay in wool as in other fabrics, until the sheer-weight, bright-color wool fabrics were brought to their notice.

Flannels, for example, instead of the regulation pastel shades, were introduced in high pastels—vivid greens, intense violets, autumn-like ambers, and rusts—together witht a provoking array of reds, blues, greens, and browns, all with a vividness not heretofore seen. Of the neutral shades, gray has been the most outstanding to hold a consumer acceptance gained early in the season.

Crepes have favored coppery browns, brilliant reds, and striking greens among a variety of other colors.

Coating colors, though following the same color range, are properly more subdued in color.

A strikingly new note has entered the coat and suit fabric field this season: Camel hair in high color! In addition to the usual natural and gray shades heretofore produced, college girls are rallying to the appeal of wine leaf, admiral blue, Devon green, applemint, scarlet leaf, and several other high shades in camel hair.

Among the wool color notes of interest seen at the Fashion Futures showing were a combination of blue and plum-brown in a jacket suit by Marcel Rochas, a brown tweed suit, with green wool blouse by Victor Steibel, a tweed suit in mustard color, a black wool skirted evening dress topped by a brilliant cerise minaret taffeta, and a tweed suit combining interesting shades of wine and green.

Yes, color decidedly has a future, and that future is nowhere more interesting than in wool.

•

1. A Lanz of Salzburg suit in gray chatham tweed with rust colored trimming and hat. Garment is by I. J. Rubin & Richard Holsten.

2. High color camel hair coats by S. Stroock & Co.

3. Colored wool frocks for juveniles—Left (standing), navy wool crepe dress with red wool crepe collar, fabric by Pacific, garment by Seibel & Stern; right (seated), green twin cord dress by Cogswell & Boulder, fabric by Botany.

4. Coat for little girl by Juvenile Coat Co. from line of tweeds by Deering-Milliken.

ADVERTISING PAGES REMOVED

TEXTILE WORLD ANALYST

Industry starts upward again and this time with assurance

Textile Activity Gains Sharply: The 1935 rate of textile mill activity continues to run well ahead of 1934. The total for the first eight months of this year was approximately 11½% above the corresponding period last year. When statistics are available for September, the percentage increase will be even greater because comparison will be with the low-ebb strike month last September. We would estimate textile mill activity for the first three quarters of 1935 at approximately 15% greater than that for the corresponding period of 1934. . . . . Evidence accumulates that, in addition to this improvement in volume, margins will be better during the balance of the year with the result that textile manufacturers might have a chance to reap a modest profit.

TEXTILE improvement is now a well-established fact. By the middle of last month, observers had become convinced that it was something more than a flurry. Typical of outside comment, at that time, was Standard Statistics Co.'s statement that "indications are that the textile trades will enjoy a sound and marked revival in both operations and profits this fall." From inside the industry comes such concrete evidence as the report from James Talcott, Inc., that their volume of business for the current year to Sept. 19 was 24% ahead of the corresponding period of 1934. "General recovery in textiles from the unsatisfactory levels of early this year has been one of the brightest spots in the 1935 record," this factoring company states. The testimony of these two observations could be multiplied many times.

Emphasis should be placed on the adjective "sound" used in connection with "revival." Very definitely, the current movement is regarded as based on firmer foundation than was any previous start out of the depression. As indicated elsewhere in this issue, the improvement in the capital goods industries is one of the main bases for this belief.

That the textile up-swing will continue to the end of the year is pretty generally agreed. The extent of its continuation into 1936 is a matter of considerable controversy. The best dope at present is that, if general business continues to improve at the rate promised just now, textiles must inevitably reflect this situation. The outlook at least into the spring of 1936 seems bright.

Shortage—that good old prehistoric condition—came back to life in the cotton goods market: specifically, in wide sheetings and sheets. The scarcity in those lines was termed the most acute since war time. As a whole, this branch of the industry was in a good position. Sales in August and part of September exceeded production. Manufacturing margins (Tables I and II) maintained the spread they achieved in August, and the chance to pick up an honest dollar in cotton goods is better today than it has been for more than a year.

Shipment of rayon yarns during September established an all-time high.

The wool situation continues remarkably firm. Many mills are sold up well ahead, and a succession of price advances above opening levels has been the rule. The men's-wear end is particularly strong; there is now a tendency toward the replacement of suits which has been missing during the recovery period to date.

Incidentally, a bit of past history has been released by the Federal Trade Commission in the form of the report of its investigation of the wool manufacturing industry. Net earnings on the textile investments of 46 woolen and worsted spinning companies were at the rate of 3.78% for the first half of 1933; 9.88% for the last half of that year; 0.4% for the first six months of 1934—and a loss of 8.86% for the last half of 1934. For 18 weaving companies, these figures for the same four periods were 7.14%, 13.02%, 3.35% loss, and 17.31% loss respectively. For 125 combined spinning and weaving companies, the rates were 1.49%, 13.78%, 1.42%, and 6.9% loss.

Raw silk continued to furnish the fireworks in September prices as reflected in TEXTILE WORLD's price index numbers and climbed from 37 to 41, the highest point reached since January 1932. The sound price structure that prevailed in cotton cloth during the month is brought out by the fact that the cloth index actually advanced four points in the face of a decline of five points in raw cotton. A rise in medium wools pushed the index up four points.

TABLE I. CARDED FABRIC MARGIN

Date	Margin in cents	Date	Margin in cents
August, 1933....	21.4	March, 1935....	15.9
October, 1933...	19.1	April, 1935.....	16.1
January, 1934...	18.4	May, 1935.....	16.0
April, 1934.....	17.6	June, 1935.....	16.5
July, 1934.....	15.5	July, 1935.....	15.2
August, 1934....	16.6	August.....	17.1
September, 1934	18.6	September.....	17.9
October, 1934...	17.4	Sept. 11....	18.1
November 1934.	15.8	Sept. 18....	18.0
December, 1934	16.2	Sept. 25....	17.9
January, 1935...	16.2	Oct. 2....	17.6
February, 1935..	16.0		

TABLE II. CARDED YARN MARGIN

Date	Margin in cents	Date	Margin in cents
August, 1933....	23.5	March, 1935....	14.4
October, 1933...	20.0	April, 1935.....	14.1
January, 1934...	18.3	May, 1935.....	13.8
April, 1934.....	15.9	June, 1935.....	14.5
July, 1934.....	14.7	July, 1935.....	14.3
August, 1934....	15.3	August, 1935....	15.3
September, 1934.	15.6	September.....	15.4
October, 1934...	14.6	Sept. 11....	15.3
November, 1934.	13.5	Sept. 18....	15.4
December, 1934.	13.5	Sept. 25....	15.7
January, 1935...	13.5	Oct. 2....	15.2
February, 1935..	13.9		

▼ ▼ ▼

Textile World's Price Index Numbers

Date	Cotton Index Numbers: Cotton	Yarns	Gray	Colored	Wool Index Numbers: Wool	Tops	Yarns	Cloth	Silk Index: Raw Silk
July 31, 1914..	100	100	100	100	100	100	100	100	100
1932, average..	51	76	73	100	78	97	115	128	34
1933, " ..	84	116	110	113	116	135	139	181	35
1934, " ..	132	142	139	141	138	159	167	206	28
Jan. 1935.....	135	138	137	140	124	132	154	190	32
Feb. 1935.....	134	138	136	140	116	124	152	190	31
Mar. 1935....	127	136	134	139	108	118	148	190	29
Apr. 1935.....	127	135	131	138	105	114	148	190	30
May 1935.....	132	137	133	139	108	116	150	200	30
June 1935.....	128	138	133	139	123	135	155	200	30
July 1935.....	131	140	130	139	123	135	155	200	33
Aug. 1935.....	125	139	131	139	123	135	155	200	37
Sept. 1935.....	120	135	135	139	127	137	156	200	41

Note: All cotton indices since Aug. 1, 1933, include processing tax.

Overseers'

THIS DEPARTMENT

offers practical material for the use of overseers in meeting the daily problems of their jobs. It includes valuable suggestions on industrial relations in the handling of which both the overseer and the superintendent are involved. Under the heading "Kinks" appear short cuts in mill technique which have already solved problems in at least one mill and may help in yours. The central panel features material from a mill superintendent's diary which offers practical hints on various matters taken from actual mill experience. We solicit your contribution to this department—see panel on opposite page for details.

▼

Callaway Mills Issues "51 Questions and Answers"

Covering virtually every phase of employer-employee relations, both in working and living conditions, a booklet entitled "51 Questions and Answers" has been issued by Callaway Mills, with headquarters at LaGrange, Ga., as a guide to employees and prospective employees. Perhaps the best way to show the comprehensive nature of the booklet and the diversity of subjects covered is to list a few of the questions that are answered:

Q. What is the wage policy of Callaway Mills?
Q. How can I rent a house from Callaway Mills?
Q. With whom can I place my order for coal or wood?
Q. How can I get a free physical examination every year?
Q. Who is eligible for group insurance?
Q. Will the company help me buy a cow?
Q. How can I enroll my children in school?
Q. Does Callaway Mills give a vacation to employees?
Q. Can I make suggestions for improvement? How?
Q. How are our goods sold?
Q. How can we help keep our customers, thereby insuring more regular employment?

More "Smoke" About Smoking

Editor, Overseers' Corner:

"The Cigarette as Robber," as presented by R. J. Waldo in the July issue, brings to mind several angles. I feel personally that smoking on the job is entirely unnecessary and adds nothing to the efficiency of the workers. To those who feel otherwise, I would say that smoking has been outlawed generally in public buildings and places where it would lead to a loss of life or property. Sell the worker the idea of protection to himself and others and then follow up with an order of "No Smoking." Greater "selling" problems have been solved and this one can be done by placards and posters.

If the mill management is inclined to feel that the smoker should retain this privilege, then it must also feel that a little money should be spent in proper support of the privilege. To do this, a relief operator can be placed in each group to watch the machines while the regular man is enjoying his smoke and "soaking" the company. This is one of the costs incurred by the "privilege" and would be charged, I suppose, to recreation!

The idea is advanced by Mr. Waldo that efficiency is improved by an occasional "drag" and that some workers require this stimulant. This, I feel, is false logic. Replace the tobacco stimulant with that of a beverage containing alcohol and think of the results if a worker should slip away for a "swig" in place of a drag! The alcohol is less of a fire hazard than smoking. Smoking is a habit that is hard to break, but it can be controlled. We have in our mill nearly 4,000 workers who are able to control their desires and all smoking is done in the cafeteria.

Each mill is a separate problem in itself, and if the smoking habit has grown up and been tolerated until it has become a payroll leak, it should be viewed with alarm as is any mill leak. Why not put a level-headed man in charge to find out what course to pursue? Perhaps a few layoffs for violations would convince the workers that the company means business.

Smoking is not the problem it is presented to be. Proper supervision is the real problem. And don't think that the writer is one who is opposed to smoking, as I enjoy my cigarettes and pipe a lot!

JACK MILLER.

Editor, Overseers' Corner:

The three words in the caption "Cigarette as Robber" over Mr. Waldo's letter in the July issue contain as much truth as any three words that can be written.

Cigarettes are playing havoc to a great many things from babies to insurance companies. As pointed out by Mr. Waldo, the cigarette is one of the greatest menaces that can be used around any textile plant as the materials are so easily ignited, and, further, there are the inaccuracies on the part of the machines that are neglected by smokers as they take time off for a "fag." Any secluded place, such as unused stairways, that is not closely watched will afford a hiding place for the addicts.

Frequently I think that the use of tobacco in any form should be prohibited in the mill. It is almost an impossibility to keep the machinery clean, especially fly frames, where tobacco chewing goes on, even though cuspidors are provided and cleaned daily.

I would not think for a minute of forbidding the general force of employees their indulgence of a smoke or a chew unless the supervisory force came under the order as well. It is not fair for the superintendent, overseers, and second hands to be allowed the privilege of going to the office or out to the gate to partake of this self-chosen pleasure unless the sweeper, doffer, or any one else in the mill who wants to has the same pleasure. The leader should set the example.

F. L. BYRD.

From a Superintendent's Diary—

THE SUPER GETS A

(Based on actual mill notes)

I SUPPOSE that every one gets in the mood once in a while where nothing seems to be right and I guess I'm in that sort of state right now. Since I'm feeling that way, I might as well get off my chest a number of minor items that have irritated me. I find that once I set things down and then check myself up to see that something is done about them it is much better for the overseers and for myself than if I just go around with a lot of irritations under my skin. What's more, when I start to put things down I often find that there are times when I, myself, am at fault!

Several times I have gone into the mechanical department and found an overseer watching a mechanic doing some piece of work. The overseer always explained that it was just a little something that he wanted to be sure to see done right, but this seems all wrong to me. The mechanical department is perfectly competent to do its work without supervision and without wasting the overseers' time, and I find that often these "special" jobs really aren't important and could be done by the overseer in his own department if he had a little initiative. As a check on this, in the future I'm going to have all mechanical jobs okayed by me, or by my assistant in my absence.

Corner

CONTRIBUTIONS

to the "Overseers' Corner" will be paid for without regard to length. We will be glad to use letters discussing the super's diary or any other pertinent matter whether of mechanical, managerial or just plain human interest. Those who contribute kinks will be paid additional for an appropriate sketch to illustrate their device. It is not necessary to submit finished drawings. If these pages interest you—contribute something to them to interest others. Address Editor, Overseers' Corner, Textile World, 330 West 42d St., New York, N. Y.

LOAD OFF HIS CHEST

By John Williams

Another thing that annoyed me is that we had a small fire in one of the departments and there was so much milling about that you would think that the whole State was on fire. Overseers seem to forget it, but one of their jobs is to see that things are organized so that everything runs smoothly when a fire breaks out for one reason or another. In this particular case, the overseer had never even told new operatives where the fire extinguishers were located or explained what they should do. This is just a case of plain carelessness.

I suppose that I am somewhat at fault in not emphasizing the point, but believe me things are going to be organized properly in the future if I have anything to say about it.

When all is said and done, though, I think the real reason for my feeling peevish is that this morning one of the overseers came up to me and began to point out in a very round-about way, that he was handicapped because one of the other overseers wasn't doing a good job. I wouldn't be a superintendent if I weren't capable of judging my men without "inside" information and such story-telling makes me plenty mad. If any one has any criticism, he can make it at our open meetings or not at all.

KINKS

Note on Finishing Camel's Hair Cloth

If the finisher finds coarse hairs showing on the surface of unfinished pieces of camel's hair cloth after fulling, the following should be done:

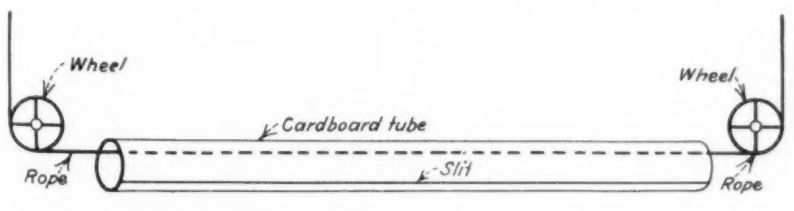
Before napping such pieces, give them a run over the shear—both front and back. This should eliminate the undesirable fibers and produce a beautiful surface. J. M. Masson, Sr.

Lessening Grease Spots When Weaving Plushes

The rope of the knife movement on a loom weaving velvets or plushes frequently makes grease spots on the bottom piece. The operative, when inspecting the bottom piece, turns the cloth loose while the loom is running and the cloth touches the moving rope and causes the damage. Special precautions must be taken in weaving goods for dyeing into light colors.

There is an easy and inexpensive way of keeping the pieces from getting dirty or torn from the knife rope. A cardboard tube, about 3 to 4 in. in diameter, and as long as the width of the loom, is all that is needed. The tube is slit lengthwise and slipped over the rope, as shown in the diagram, and the rope is thus covered.

H. H.

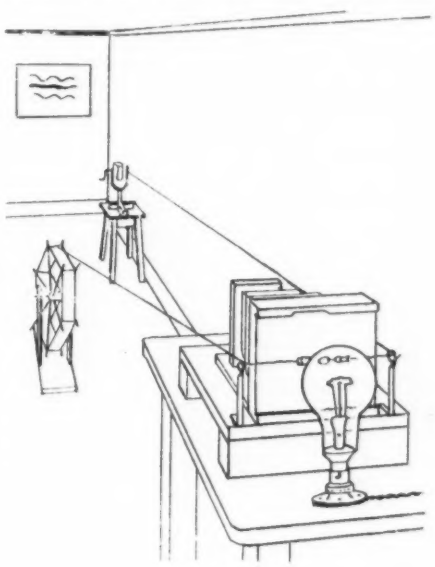


Visual Examination Of Yarn Defects

A simple apparatus for examining yarn by projection is described by T. Lonsdale in the *Textile Manufacturer* of England.

If a camera is focused sharply on a screen, the lens projects a much-reduced image on the plate; conversely, if a brightly illuminated object is placed in the position normally occupied by the plate, an enlarged image of the object will be seen on the screen. The apparatus consists of a yarn holder placed in the position of the plate of a camera, as shown in the diagram. Any fairly good plate camera that can focus objects at about 10 ft. may be used.

The yarn holder consists of a stout, brass plate cut to the size of the dark plate and slid into the camera. The plate is perforated in the middle with a hole ½ in. in diameter and is fitted with two guides. The



yarn to be examined is run from a skein or cop, through the guides, and to a small skein winder with a handle, placed near the examination screen. Illumination is afforded by a clear-glass, 100-watt lamp placed with its filament horizontal to, and immediately behind, the yarn. It is important to adjust the filament in this manner as the image of the filament can then be seen out of focus on the screen as a zig-zag line with the image of the yarn running across it as a black silhouette. The lamp should be placed in a ventilated box and best results are obtained in a darkened room. If a vertical scale is drawn on the screen, the diameter of the yarn can be measured by the width of the image. Scale readings to one hundredth of an inch can be made by projecting the image of a piece of wire whose diameter has been measured by a screw micrometer.

QUESTIONS AND ANSWERS

Yarn Sizes for Thread

Technical Editor:
Will you kindly advise me as to the sizes of yarn used to manufacture 20/2, 30/2, 40/2, 50/2, 60/2, 70/2, 80/2, 90/2, 100/2, 120/2, 140/2, 160/2, and 180/2 thread; also the number of ounces on each size to make a 12,000-yd. cone to the above thread sizes. Also please advise as to 24/3, 30/3, 40/3, 50/3, 60/3, 70/3, 80/3, 90/3, and 100/3 thread and the number of ounces of yarn used to make the 24/3, 7200 yd., 30/3, 9600, balance, 12,000 yd. Also size of yarns to manufacture 12/4, 16/4, 20/4, 30/4, 40/4, 50/4, 60/4, 70/4, 80/4, 90/4 thread with number of ounces to 6,000 yd. on each. Also size of yarns to manufacture B/3, A/3, 0/3, 00/3, 000/3, 0000/3, and numbers of ounces used to pound. (8272)

The approximate single-yarn cotton counts and also the plied counts for manufacturing the various ticket numbers specified are shown in the following list. It should be mentioned that the ticket number of the threads is no index of the actual yarn counts used and that different mills may use somewhat different counts for identical ticket numbers. A good plan is to procure some of the material which it is desired to duplicate, size the plied material, and then make the single yarns 2 to 3% finer to allow for the coarsening effect of the contraction due to the twist of the plied yarns.

Yarn Sizes for Thread

Ticket No. 2/c	Actual Yarn Counts	Thread Counts	Ounces per 12,000-yd. Cone
20	16.25	15.75	29.02
30	18.00	17.50	26.12
40	19.75	19.25	23.75
50	25.75	25.25	18.10
60	31.75	31.25	14.63
70	35.75	35.25	12.97
80	41.75	41.25	11.08
90	45.75	45.00	10.16
100	46.50	45.25	10.10
120	53.75	52.75	8.67
140	54.50	53.00	8.63
160	60.50	59.25	7.72
180	66.00	64.25	7.12
3/c			
24	21.00	21.25	*20.32
30	28.00	25.75	†21.30
40	35.00	33.50	20.47
50	40.00	39.00	17.58
60	46.00	44.25	15.50
70	56.00	52.75	13.00
80	65.00	61.75	11.10
90	73.00	71.75	9.55
100	85.00	83.75	8.18
4/c			Ounces per 6,000-yd. Cone
12	14.50	14.00	32.65
16	20.00	19.00	24.06
20	24.50	24.00	19.05
30	38.00	36.50	12.52
40	46.50	46.00	9.94
50	56.00	54.50	8.39
60	65.00	63.50	7.20
70	70.00	68.50	6.67
80	73.00	70.00	6.53
90	76.00	73.00	6.26
3/c			
B	26.00	25.00	‡
A	28.25	27.25	‡
0	37.00	35.50	‡
00	45.25	44.00	‡
000	55.00	53.50	‡
0000	75.25	73.50	‡

*Per 7,200-yd. cone. †Per 9,600 yd. cone. ‡Approximately 16.50 oz. yarn required per pound of 3/c thread.

Hose Damaged on Inside

Technical Editor:
We inclose herewith a full-fashioned stocking which has been returned by a customer requesting information as to this unusual wear.

This stocking was worn last Saturday evening under a full-length silk evening dress. The wearer has had similar trouble with three other pairs of hosiery. We are unable to determine the nature or cause of this damage and shall appreciate your opinion. (8251)

This is not a question of wear; it is one of abuse. The kind of skirt worn by the customer had nothing to do with the injury to her hosiery. The damage was all on the inside of the stocking and was caused by the hose coming in contact with some rough surface. If the stocking had come in this condition from a metal or wood form, we would suggest polishing the form with a fine emery cloth; but if the damage was caused by the wearer, the trouble can best be overcome by a chiropodist or a skin specialist.

Silk Pickers

Technical Editor:
Please advise me whether the tail on single-box silk-loom leather pickers should point upwards or downwards. (8266)

It can be placed either way, depending on the preference of the fixer. We recommend the upward direction, as this is less likely to force the picker out of shape and subject it to early damage.

Woolen Count Variations

Technical Editor:
What percentage of variation in counts should be expected in the manufacture of woolen manipulated yarns using the cut system and mule spinning frames? By woolen manipulated yarn, I mean yarn made from stock that is not all wool. We realize the part played by the skill of the operator and the use of the compensating devices on the mule frame to correct the variations, but are assuming average, well-balanced conditions. (8259)

The inquiry is rather vague. It all depends what size of yarn is being used and what mixture. Furthermore, it is of great importance whether virgin wool or shoddy is mixed with cotton, rayon, silk, mohair, etc. If virgin wool is mixed with rayon or silk, spun to a count of 3.2-typp or finer, employing an average twist co-efficient, we would say that a maximum variation should not be any higher than plus or minus 5%. Of course if shoddy is being used, the variation might go up to between 7½ and 10% plus or minus. If a woolen-yarn mixture is spun with a high twist, the variation would most likely fall around plus or minus 10%. Of course, the fact that the cut system is being used will hardly have any bearing on the case, especially as long as we talk in terms of percentage of variations.

Boucle Yarn Dyes Unevenly

Technical Editor:
We inclose herewith a sample of boucle yarn dyed on a Klauder-Weldon dyeing machine. We are having considerable trouble with the dyeing of this type of yarn from the standpoint of penetration on darker shades. The center of the yarn showing white after dyeing. We wonder if there is anything on the market that would help us to penetrate this type of yarn successfully, or if there is any definite method in handling this yarn to obtain this result. (8175)

While this sample is generally lacking in penetration of color, the core seems to be almost uniformly undyed, while the frill is only bare in spots where it contacts with the core. Several conditions might be responsible for this lack of penetration: First, there might be on the fiber some dressing or sizing material that had not been entirely removed before dyeing and which acts as a resist. Again, there is indication that the dyeing took place so rapidly that the bath was exhausted before it had a chance to penetrate the twist. Finally, the dyes used appear to be deficient in leveling and penetrating power.

Whatever the true cause, it is advisable to have the yarn perfectly clean before commencing to dye, there being at present on the market a great number of preparations sold for this very purpose. Then select dyes that are noted for their level dyeings on rayons and further assist these by some addition to the dyebath which will promote leveling and penetration. Tri-sodium phosphate and pyridine are often employed for this purpose, and there are many proprietary chemicals recommended for the same purpose. Also, reduce the amount of salt used in the dyebath, at least until the dyeing is nearly completed. Do not raise the temperature too rapidly, but give the dye a chance to penetrate before it fixes itself.

If these precautions are taken, there is no reason why the results will not be entirely satisfactory, providing the yarn is made of the same grade of fiber throughout. Naturally if the core is one type of rayon and the frill of another kind, there will be a great variation in the affinities toward dyestuffs. It is possible, however, today to obtain dyes which will dye quite uniformly on viscose of unequal affinity.

Stripes in Hosiery Feet

Technical Editor:
I should like to find out the cause of the irregular striping which runs through the inclosed pair of stockings. It has a very brownish tint and runs sometimes a course and sometimes part of a course, but all through the foot end of the fabric. (8246)

Trouble of this character cannot be easily located without an inspection of the manufacturing operations at the plant or a chemical analysis, but we believe that the following suggestions will guide you to the source of the defect: Such stripes are sometimes oil stains from throwing machinery (such as spindles and winder arbors), oil stains from backwinding, dye stains from tinted cloth-covered cones, dye stains from knit-

QUESTIONS AND ANSWERS

ting pads under the bases of the cones on the knitting machine, and mildew from silk that has been kept on the cones too long after having been backwound or conditioned. There are other possible causes; but, without knowing your methods of handling silk, it is futile to conjecture.

We might say, however, that the stain more strongly resembles mildew than any of the other common stains, but that the application of a mild stripper readily removes the streaks completely, indicating that they are more likely a dye than either mildew or oil. The stripped stockings can be dyed a delicate shade without any trace of the stains appearing, and this is a further indication that the cause of the trouble is not mildew or oil—or even rust.

Holes in Hosiery

Technical Editor:
We recently had two pairs of three-thread, dip-dyed hose returned to us containing holes similar to those in the stocking we are inclosing. The story as we learned it from the store was that a box, or three pairs, was sold to a customer several weeks ago. The first pair was worn about a week ago and gave very poor service, due to holes and runs. The second pair broke out when the stockings were put on. Then, upon examining the third pair, the customer noted that there were holes in the fabric. Naturally there was considerable dissatisfaction on the part of the customer and also the store. We firmly believe that these stockings never left our mill in this condition, and from our examination believe that a bug, such as the carpet beetle, was responsible for the holes. We shall, however, be grateful if you can either verify our theory or give us other information as to the possible cause of the trouble. (8245)

The sample submitted does not give sufficient evidence to produce a definite opinion as to the cause of the trouble. It does, however, clearly indicate one of two conditions: first, that it was finished and sent out from the mill just as received by us; or, second, that it was refinished by the mill after being returned to it and before being sent out with the inquiry. Runs such as shown by this exhibit develop while the stocking is on the drying form and are different enough in characteristics from runs developed while the stocking is being worn to classify them definitely as what we would call "finished runs."

We would also take a definite position that the holes were not cut by a bug, such as the black carpet beetle. Damage by carpet beetle and other vermin, such as roaches, mice, etc., takes place generally in the gray-goods bins. Usually cuts of this nature felt or nap the silk fibers to such an extent that runs rarely develop from the holes in dyeing and finishing.

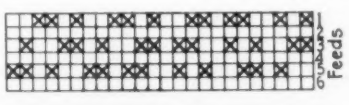
The holes in the sample submitted are clear, clean cuts, showing no evidence of broken fibers or a felted condition. This indicates that the holes were cut by an instrument of some kind while the stocking was against a hard surface such as a metal drying form, or were pinched in the door of a dyeing machine. We have seen almost identically the same kind of holes and runs produced by rings worn by the boarder striking against the stocking during the act of boarding. Such an accident takes place

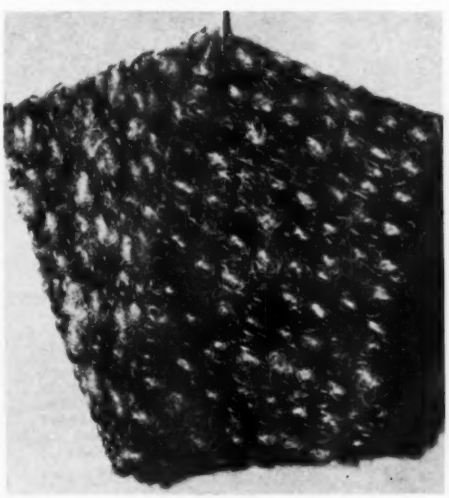
after the stocking is drawn well on the form, with the fabric partially dry and under tension, and runs will invariably develop from such cuts. Basing our opinion on the assumption that the stocking submitted was sent to us in the same condition as it was returned by your customer, we would be strongly disposed to say that the damage was caused in your finishing room in your finishing process, escaped the notice of your inspector, and was sent out in the condition as returned to you.

Backing-Wheel Layout

Technical Editor:
Inclosed find sample of cloth made on 10-gage Tompkins machines. Kindly advise how backing wheel was plugged to get this effect. (8269)

The layout for the backing wheels is shown below. The crosses indicate blocks





in the backing wheels. There are six feeds, three plain and three with backing wheels. The needles in the cylinder must divide by 24 with 12 over. The backing wheels must have 24 or 48 blades.

•

CORRESPONDENCE

Calculating Warp Contraction

Technical Editor:

The discussion in the June issue of TEXTILE WORLD [page 104] on the subject "Calculating Warp Contraction" is of more than passing interest to the experienced as well as the inexperienced textile designer.

According to your correspondent, the point at issue is whether the cloth or the warp yarn taken from a small sample of cloth should be considered 100% constant. From a practical standpoint neither the one nor the other can be termed 100% constant, as both are subject to variable physical conditions, a few of which follow: (1) The elasticity of woolen fibers is affected by the atmospheric conditions prevailing at time of analysis. (2) Filling-yarn irregularities with which the warp yarn interlaces will cause a variation in the curvature of both series of threads. (3) The amount of handling the small sample receives before measuring may cause thread distortion and stretch. Although these factors prevent the calculation of take-up beyond the possibility of error, they are not sufficient to preclude a fairly accurate and reliable estimation of warp contraction being computed near enough for all practical purposes.

Comparing the two methods of ascertaining this warp contraction, it seems to me that the sample measurement insures a higher degree of accuracy than the warp-yarn method. On the one hand, the yarns are measured in their woven state, thus being more or less fixed by the filling intersections, and this state undoubtedly furnishes us with a truer and more accurate basis of measurement. On the other hand, the withdrawing of the warp ends before measuring increases the liability to error considerably.

The operation of separating the warp from the filling threads is bound to cause a length variation of the threads withdrawn in ratio to the firmness of the weave and the tension applied by the measurer in separating the two series of threads. The proof of this may easily be demonstrated by taking a 2-in.-square sample and withdrawing one thread from the warp. This, on measuring, will be found to be slightly in excess of 2 in. Consequently, although this method entails a good deal more care in its operation, it utterly fails to guarantee more accurate results.

Your correspondent also implies that the yarn method is more constant on the assumption that each cut is known to be of uniform length on leaving the dressing frame, although the woven cloth shows a fluctuation of 2 to 3%. Numerous reasons may be assigned for this cloth variation during the weaving operation, with which apparently he is conversant. But it is very questionable if all the cuts on a beam are of the same length; and unless we assume that the combined human and mechanical elements are infallible—a rather large assumption—the cut lengths are also liable to variation.

However it is not absolutely necessary to have a constant, as, when estimating the warp take-up, we are really dealing with ratios between the woven state and the yarn state. Therefore the sample measurement method offers the easier as well as the more accurate procedure.

In conclusion, it should be borne in mind that when estimating the weaving particulars from a finished sample we are really working retrogressively and are forced to rely on our experience, knowledge, and observation before we can hope for reasonably accurate results.

R. A. C. SCOTT.

THE PERSONAL PAGE

Allen F. Johnson, formerly manager of the southern plants of Consolidated Textile Corp., has been elected president and treasurer of Florence Mills, Forest City, N. C., and of American Spinning Co., Greenville, S. C., a subsidiary, succeeding the late D. D. Little. He will reside in Greenville. **I. L. Langley,** who served as Mr. Johnson's assistant, succeeds him as manager of the southern plants of Consolidated Textile Corp.

M. E. Heard has been promoted to acting head of the textile engineering department of Texas Technological College, Lubbock, Tex., succeeding **C. D. Brandt,** who has resigned. **R. F. Redding,** formerly with Lanett (Ala.) Bleachery & Dye Works, has been appointed assistant professor of textile engineering and will teach weaving and designing.

Earle R. Stall has been elected president of F. W. Poe Mfg. Co., Greenville, S. C., succeeding **Nelson C. Poe, Jr.,** who did not seek reelection. **F. W. Symmes** was reelected vice-president.

R. A. C. Scott, well-known to readers of TEXTILE WORLD for his articles on woolen and worsted design, has been placed in charge of all-wool and part-wool fabrics and blankets at Esmond (R. I.) Mills.

Walter J. Mooney, for many years associated with Frank B. Graves Co., Albany, N. Y., has become president and part-owner of Ballston-Stillwater Knitting Co., Inc., Ballston Spa and Stillwater, N. Y. **William Currie** has been elected vice-president and **James M. Beverly,** secretary and treasurer.

C. B. McNally has resigned as president of Duke Knitting Mills, Inc., Mt. Airy, N. C., and has established a manufacturers agency with headquarters in Baltimore, Md.

Charles B. Nichols, formerly treasurer of Otis Co., Ware, Miss., has been elected treasurer of the Appleton Cotton Mills, Anderson, S. C. He succeeds the late **D. D. Little.**

Ralph Carlson, formerly with the Slater Co., Webster, Mass., has been made head of the rayon dyeing department of the Putnam Finishing Co., Mechanicsville, Conn.

David Haig, formerly agent and treasurer of the Aetna Mills, Watertown, Mass., has been appointed agent of the National & Providence (R. I.) Mills of the American Woolen Co.

Charles B. Jennings, formerly in charge of the carding department at the Sanford (Me.) Mills, has been made superintendent of the yarn department of M. J. Whittall Associates, Worcester, Mass.

E. Gray Bost has been made treasurer of Cannon Mills Co., Kannapolis, N. C., succeeding **G. B. Lewis,** who recently resigned because of ill health. **Hearn Swink,** secretary, succeeds Mr. Lewis on the board of directors.

Richard Davis, formerly with the Holden Leonard Co., Bennington, Vt., has been appointed overseer of dyeing for the Oxford Looms Co., North Oxford, Mass.

Leighton H. Peebles, former NRA administrator in charge of utility codes,

A. F. Johnson

M. E. Heard

has succeeded **Prentiss Coonley** as director of the division of business cooperation, NRA, Washington.

Howard D. Jobe, vice-president in charge of sales for Adams-Millis Corp., High Point, N. C., was scheduled last month to change his headquarters from New York to High Point. It is understood that he will continue to supervise sales.

William E. McLeod has become associated with Haywood Mackay & Valentine, New York, in charge of sales of the Eagle & Phenix Mills Department. He had charge of the same account at Wellington, Sears & Co., several years ago.

Charles H. Ross, formerly with Ranlo (N. C.) Mfg. Co. and later with Burlington (N. C.) Mills Co., has been appointed production manager for Valdese (N. C.) Weaving Co., recently purchased by Shuford Mills, Hickory, N. C., and formerly known as Waldensian Weavers, Inc.

John C. Donaldson, recently assistant treasurer of Hamilton Woolen Co. in charge of its New York office, has joined the Nashua Mfg. Co. at its New York office. He has had a wide experience in textile credits.

J. A. Almond is now manager of Dixie Hosiery Mill, Mt. Gilead, N. C. He comes from Statesville, N. C.

This Terrible Textile Industry!

Every so often some labor agitator, whose knowledge of the industry is gained by looking at mills from the outside, almost breaks down in tears while describing the back-breaking toil performed by the textile "slaves." Such speakers might consult the following:

Mrs. Helen M. Barnes, aged 71, has recently started on her second 50 years as a weaver at the Harris-Emery Woolen Co., Quechee, Vt. During her first 50 years Mrs. Emery wore out six looms and produced 2,712,320 yd. of cloth.

Mrs. Mary Dietz recently completed her 64th year of practically continuous employment in the textile industry. She has been with the Double Shoals (N. C.) Mfg. Co. during the tenure of 15 superintendents. Mrs. Dietz has four children, seventeen grandchildren, and three great-grandchildren.

George C. Mathews has just retired as overseer of carding at the Old Town Woolen Co., Guilford, Me., after 61 years in the industry. When he first started with the old Guilford Woolen Mill, Mr. Mathews worked eleven hours a day, six days a week.

Patrick Birmingham has started his 63rd year as an employee of the Draper Corp., Hopedale, Mass.

William B. Berry has been given complete charge of operation and sales of the bleachery at Ware Shoals (S. C.) Mfg. Co. Under Mr. Berry's direction, **R. C. Nicholas** will be in charge of the New York office of the bleachery.

Thomas Turner has been appointed manager of the United States Finishing Co.'s Silver Spring plant at Providence, R. I. **Nelson Barlow** has been named manager of the Queen Dyeing Co. plant, Providence, to succeed **Joel Goldthwait,** who is assigned to the research and development staff.

H. R. Hart, general superintendent of Langley, Aiken and Seminole plants, of Aiken (S. C.) Mills, Inc., has been transferred to Charlotte. He has been active with the Southern Textile Assn.

J. W. O'Neal, formerly assistant superintendent of Consolidated Textile Corp., Lynchburg, Va., has been made superintendent of Gainesville (Ga.) Cotton Mills, succeeding **George B. Moore.**

Otis E. Stevens has resigned as general manager of the two plants of Saratoga Victory Mills, Inc., Albertville and Guntersville, Ala.

Fred Bowman, formerly of Waverly Dye Works, has been made plant superintendent of Sunbury (Pa.) Converting Works, which started up last month.

R. A. Hood has resigned as cost clerk at the Tucapau (S. C.) Mills, and has become paymaster at the Pelzer (S. C.) Mfg. Co.

F. D. Herring has become superintendent of the weaving division of Cliffside Mills, Avondale, N. C.

Willie Hunt has been appointed superintendent of carding for the Arnall Mills, Sargent, Ga.

Leroy Hiller, superintendent of the Lowell Bleachery South, dye plant, which is Unit No. 2, Griffin, Ga., has resigned.

B. D. Snow has been appointed designer for the Callaway Mills, Manchester, Ga. He was formerly overseer of spinning for the Stonewall (Miss.) Cotton Mills.

H. F. Jackson has become assistant to **M. G. Stone,** superintendent of Pacolet Mfg. Co., New Holland, Ga.

Carl M. Moore, who recently resigned as superintendent of Piedmont (S. C.) Mfg. Co., has become connected with the personnel department of Callaway Mills, LaGrange, Ga.

Ernest H. Douté has been appointed stylist of Angle Silk Mills, Inc., Rocky Mount, Va., with headquarters in New York, succeeding **Joseph LeBert de Bar,** who died last August.

G. R. Hooper has been promoted to superintendent of American Cotton Mills, Inc., Bessemer City, N. C.

G. V. Pruitt has been promoted from overseer of weaving to superintendent of the Lumberton and Dresden plants of Mansfield Mills, Inc., Lumberton, N. C., He is succeeded in the weaving department by **C. E. Faulk.**

R. T. Smith, of Bessemer City, N. C., has become superintendent of Arnall Mills, Sargent, Ga., following the resignation of **D. O. Bryant.**

Jimmie Ritter has been appointed to an office position in the Dresden plant

of the Mansfield Mills, Lumberton, N. C., having been promoted to this position from that of supply clerk.

M. M. Jordan is now head of the cloth room of the Mansfield Mills, Lumberton, N. C., having formerly held a similar position with the Jennings Cotton Mills of the same place.

L. L. Bamberger has been made purchasing agent of the Lanett (Ala.) Bleachery & Dye Works. Mr. Bamberger will also do a certain amount of supervisory work in the mill itself.

Tom R. Smith has accepted the position of the head of the new yarn-dyeing department of the Wiscassett Mills, Albemarle, N. C.

Frank Iler has been made supervisor of efficiency of Hillside plant of Callaway Mills, LaGrange, Ga. Mr. Iler is son of H. H. Iler, former president of the Southern Textile Association, and graduated from Clemson in 1934.

Fred L. Holiday, formerly overseer of finishing at the State of Alabama Cotton Mills, Speigner, Ala., has become overseer of napping and finishing at the Bradford Mills, Prattville Ala.

J. R. Turner has been appointed superintendent of carding and spinning at Virginia Cotton Mills, Swepsonville, N. C.

M. V. Freeman has become superintendent of carding at the Brandon Corp.'s Poinsett unit, Greenville, S. C., succeeding **Prayle Williams,** resigned.

Obituary

Joseph P. Voorhees, aged 66, president of J. P. Voorhees & Sons, New York, and vice-president of Magnet Mills, Inc., Clinton, Tenn., died Sept. 13 after an operation at the New York Hospital. Mr. Voorhees was located in the Worth St. district for 50 years.

H. Carroll Brooke, aged 67, president and treasurer of Aramingo Dyeing & Finishing Co., Philadelphia, died on Sept. 9.

Louisa B. Kimball, founder and treasurer of the Silk Guild, Inc., Paterson, N. J., a cooperative enterprise controlled by the employees, died at Dobbs Ferry, N. Y., on Sept. 8.

Harvey Enloe, aged 67, superintendent of W. A. Handley Mfg. Co., Roanoke, Ala., died recently.

Charles P. Doane, formerly manager of the Slater Mills, Webster, Mass., died suddenly in New London, Conn., on Sept. 24.

Edward H. Wilkinson, aged 76, who retired this year as president, Springfield Blanket Co., Holyoke, Mass., after 56 years with the company, died Sept. 26.

Robert Wyder, aged 64, founder and president of Textile Dyeing & Printing Corp. of America, Fairlawn, N. J., and a former member of the Code Authority for the silk and rayon dyeing and finishing industry, died at his home in Fairlawn on Sept. 30. He was born in Switzerland, came to this country in 1891, founded the Zurich Silk Finishing Co. of America in 1909.

John J. Manning, aged 73, active in the newspaper field for 54 years and for the last 30 years textile editor of the *Journal of Commerce,* New York, died at his home in Pelham, N. Y., on Oct. 6. Born in Fall River, Mass., he engaged in newspaper work there until 1906.

James Thomson, aged 68, associated with Minot, Hooper & Co., New York, died early in October. He was at various times treasurer of Fairhaven Mills, agent of Harmony Mills, treasurer of Arnold Print Works and vice-president of N.A.C.M.

W. C. Twitty, aged 71, former vice-president of the Pelham (Ga.) Cotton Mills, died recently.

James F. Broderick, aged 67, general inspector for Troy Laundry Machinery Division, American Machine & Metals, Inc., East Moline, Ill., died Aug. 29. He had been with the Troy organization since 1896.

Harry Courtney, president of Lenoir (N. C.) Cotton Mills, Inc., died from injuries received in an automobile wreck near Raleigh, N. C.

John H. McKinnon, for the last 15 years superintendent of the Pickett Cotton Mills, High Point, N. C., died Sept. 30.

Robert S. Church, aged 48, for over 25 years with Western Felt Works, Chicago, died late in September.

Research Institute Meeting Nov. 14

The U. S. Institute for Textile Research will celebrate the completion of its first five years of service at its annual meeting at the Waldorf-Astoria, New York, Nov. 14. The directors will meet in the morning and the afternoon will be devoted to a conference on the creping of rayon fabrics. At the banquet in the evening, Dr. Robert A. Millikan of California Institute of Technology, will be principal speaker.

Textile School Conference

The third semi-annual conference participated in by the deans of textile schools has been called for Oct. 22, 23, and 24, at Stockbridge, Mass. This series of conferences is sponsored by the Textile Foundation as part of its program of cooperation with the textile schools.

Willcox & Gibbs Purchases Metropolitan S. M. Corp.

The stock and assets of the 35-year-old Metropolitan Sewing Machine Corp., Nyack, N. Y., valued at well over a million dollars, have been purchased by the 76-year-old Willcox & Gibbs Sewing Machine Co., New York, which for several years has represented the Metropolitan organization in mid-western sales. The purchase means that to the Willcox & Gibbs line of machines, which includes lockstitch, chainstitch, Fastlock, sewing-off-arm dual-feed, millinery, and two-thread Overlock types, will be added multiple-needle, flat-bed, blanket, covered-seam, cylinder, curtain, elastic-attaching and other types. The Metropolitan subsidiary will remain a separate entity in most respects.

F. R. Towle

The Nyack plant will be retained under superintendence of A. H. Weis, but all branch sales offices of the two companies will be consolidated, and Frank A. Towle, treasurer and general manager of Willcox & Gibbs, will assume the duties of vice-president and general manager of the Metropolitan company. W. A. Viall, president of Willcox & Gibbs and vice-president of Brown & Sharpe (builder of Willcox & Gibbs machines), becomes president; D. C. Cocks, secretary; and Paul Sterburg, treasurer.

Textile Calendar

National Association of Cotton Manufacturers, annual convention, Copley-Plaza Hotel, Boston, Oct. 17, 1935.

Committee D-13, A.S.T.M., fall meeting, New York, Oct. 17 and 18, 1935.

Cotton - Textile Institute, annual meeting, Biltmore Hotel, New York, Oct. 23, 1935.

Carolina Yarn Association, golf tournament, Carolina Inn, Pinehurst, N. C., Nov. 1 and 2, 1935.

U. S. Institute for Textile Research, annual meeting, Waldorf-Astoria Hotel, New York, Nov. 7, 1935.

Fifteenth Exposition of Chemical Industries, Grand Central Palace, New York, Dec. 2-7, 1935.

American Association of Textile Chemists, annual meeting, Chattanooga, Tenn., Dec. 6 and 7, 1935.

South Plans Industrial Show for 1936; Textile Show, 1937

The Southern Industrial Show, a culmination of several years work on the part of executives of Textile Hall Corp., will be held at Textile Hall, Greenville, S. C., April 6 to 11, 1936. This show is distinct from the Southern Textile Exposition, the twelfth occurrence of which is scheduled to be held in Greenville one year later, the dates being April 5 to 10, 1937.

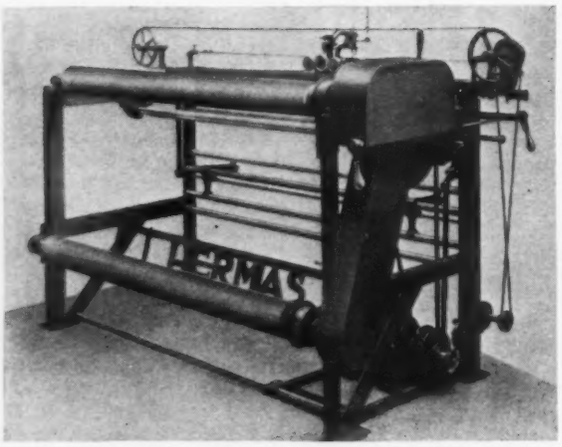
The Southern Industrial Show will be an exhibition of power machinery, installations, equipment, accessories and supplies and no textile processing machinery will be shown there. It is planned to make this industrial show a regular feature of national scope to be held periodically.

Prospectus for the Twelfth Southern Textile Exposition will be issued in November, and it is reported that already over half of the available space has been reserved. The last previous show was held April 8 to 13, 1935, a change from the fall date previously utilized for the biennial event. The success of the spring date has led to its retention.

Textile Club Meetings

Textile Associates Club opened its fall meetings Saturday, Oct. 12, at the Narragansett Hotel, Providence, R. I. Luncheon was served at 1.30 p.m., after which Alfred Pate of the Soule Mill, New Bedford, talked on "104 Weeks of the N.R.A." Subsequent meetings will be held on the second Saturday of each month until May (excluding month of January).

NEW MACHINERY



Sewing and Rolling Machine

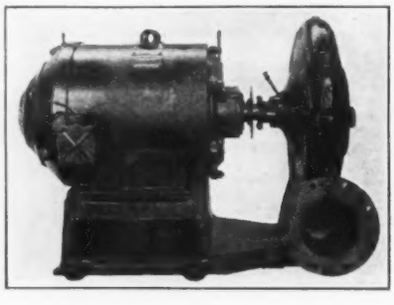
A duplex sewing and rolling machine, designed to handle 150,000 yd. cloth in 40 hr., has been placed on the market by Hermas Machine Co., Hawthorne, N. J. This machine, known as Model DC, is constructed specifically to operate in tandem with the Hermas automatic shear; however, it can be used with any other make of machine for which cloth is put up in rolls. Action is duplex and includes two separate take-up units, one of which is used as a let-off. This let-off, adjustable to loom beams of various lengths, feeds cloth into a second machine for subsequent operation. During this procedure, the other unit builds up an extra roll, so that it is never necessary to transfer rolls from one machine to another. This also means that it is unnecessary to employ a helper to assist the operator in handling rolls. Power is from an a-c. or d-c. motor-driven, variable-speed drive, and continuous operation may be expected except for momentary stops required to sew cloth ends. Ends are joined with either a chain stitch or butt seam produced by a single-needle, power-driven, railway sewing machine. The mechanism is geared to start and stop instantly without gripping and holding cloth. Drive can be transferred quickly from one take-up to the other simply by throwing a clutch. Other features include ball bearings throughout, adjustable tension on let-off units, adjustable guide rod, and revolving screw spreader to prevent wrinkles. The device occupies only 34 in. floor space, front to rear, and will handle a 30-in. diameter roll.

Waste Conditioner

For conditioning waste stocks (reclaims), such as comber waste, garnetted stocks, etc., Borne Scrymser Co., 17 Battery Place, New York, has devised a new mechanical system designed to measure accurately and positively (per pound of stock) a treating fluid, Meon-Q, and spray it over a wide area. Mechanically, the system consists of a single-head spray assembly, a four-cylinder pump, and a neutralizing eccentric shaft for driving the pistons. To this shaft is attached a concentrically fixed dial, which is graduated in numerals corresponding to a table of speeds. Percentages of liquids can be calculated from these figures and tables. A combination of check valves exerts a definite pressure against the pump outlet and assures a constant flow of liquid regardless of alternating or constant pulsations. Attached to any garnetting or shredding machine, the conditioner is said to meter accurately from 1 to 500 oz. fluid per hour. Manufacturers maintain that the system eliminates "slickness" of garnetted cotton without addition of other stocks, assures a definite regain of moisture in dry cotton, and improves running qualities.

Developments in Dyeing Machinery

Four new developments are announced by Franklin Process Co., Providence, R. I. They are a quick-opening drain valve, a fabricated stainless-metal package dyeing machine, a fabricated stainless-metal raw-stock dyeing machine, and a direct-connected motor-driven pump for Franklin machines. The drain valve, designed for use with the package or raw stock dyeing and silk soaking machines, can be completely opened or closed by giving the hand-wheel a three-quarter turn; features include an adjustable cam roll quick acting cam, floating disk, and removable seat. The package dyeing machine—of stainless steel, aluminum or Monel metal—is of fabricated construction, whereas the older models were of cast construction; a simplified piping arrangement facilitates setting-up and permits freer circulation; a shallower pit conserves floor space; an optional attachment consists of a removable false bottom (with holders), which can be loaded while a second bottom is in the machine. The raw-stock dyeing machine, being fabricated of stainless metal, has advantages similar to those cited for the package machine, together with certain additional features; in order not to disturb stock, dye liquor is forced through it only one way (from top to bottom); this procedure is said to reduce waste and improve workability; the bottom is removable as in the older models. The new pump, direct-connected and motor-driven, is designed for use with the Franklin package or raw-stock dyeing machines and silk-soaking machine; the motor shaft and pump shaft are identical and very short, tending to conserve floor space; the motor is of standard construction and can be replaced easily.

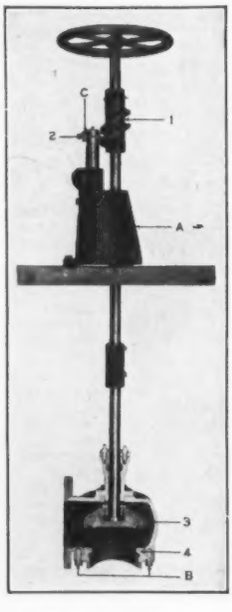


Control Instruments

On its 75th anniversary, Brown Instrument Co., Wayne & Roberts Ave., Philadelphia, announces a new and complete line of recording and indicating air-operated controllers for temperature, flow, pressure, and liquid level. Featured is the Air-o-Line, an automatic controller with 1 to 150% throttling range and automatic reset, designed to recognize and correct for the magnitude, rate, and direction of departure from the control point. This new controller may be "tuned in" (with a screwdriver) to the specific

process characteristics without interruption of automatic control and without removing the chart plate.

Other instruments in the line include the following: Indicating and recording thermometer-type controller for temperatures from —40° to 1200° F.; potentiometer-type controller for temperatures from —300° to 3400° F.; inductance-bridge-type and mechanical-type flow and liquid-level controllers combining the remote operating characteristics of the electric flowmeter with the flexibility of an air-operated controller; indicating and recording controllers for pressures from 30 in. vacuum to 3,000 lb. per sq. in.; the Full Throttler controller with 1 to 150% throttling range and manual reset; the Throttler controller with 1 to 10% throttling range and manual reset; and the On-off controller for two-position service.



Scrimp Brush

A 7-in. diameter rotary scrimp brush has been added to the line of 3-in. diameter brushes made by Bristol Stretcher Expander Co., 32 Kent St., Somerville, Mass. These brushes are designed to be placed in front of winders, calenders, printing machines, soapers, etc., where they remove wrinkles, apply finishes and in general act as guide rolls. Brushes are available in all widths and are fitted with ball bearings.

Continuously Vulcanized Transmission Belting

Transmission belting produced by a new method which involves continuous vulcanization is announced by Boston Woven Hose & Rubber Co., Cambridge, Mass. One of the important advantages claimed for the new belting is that it is of uniform quality from one end to the other, with press laps and double vulcanizing eliminated. This feature is said to prevent rapid deterioration and thus to add to the durability of the belt. Among the other advantages cited are included higher flexing quality, higher friction coefficient, and more uniform stretch. Continuous vulcanization of the belting is made possible by the development of rotary press to take the place of the flat-bed press hitherto employed in vulcanizing.

Variable-Speed Line Increased

In order to provide a greater range and flexibility of application, Link Belt Co., 910 S. Michigan Ave., Chicago, has made certain changes in the construction of its P.I.V. variable-speed transmission. The line now is available in five sizes to 15 hp. capacity, with or without integral motor, with or without speed-reduction gearing, and with either horizontal or vertical box. Formerly transmissions of this type were available in sizes to 10 hp., with horizontal box only and without reduction-gear sets or the integral-motor feature.

Limit Switch

A small, track-type, spring return limit switch, designed to make or break control or indicating circuits at a fixed point in the travel of part of a machine or mechanism, has been introduced by General Electric Co., Schenectady, N. Y. The device is operated by an 18° movement of its operating arm, which is designed to permit a 54° over-travel without damage. Simple, accurate adjustment is afforded by a worm-and-gear precision mechanism on the arm, which is clamped to the shaft by means of a bolt. Other features include a spring-return to permit the switch to be mounted at any angle, a ball-

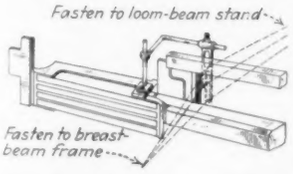
AND PROCESSES

protected oil hole at the front of the operating shaft, and a removable aluminum cover providing easy access to contacts and wiring studs.

Filling-Thread Separator

A simple, but apparently effective, device for preventing the tangling of filling threads from the various shuttles of a multi-box loom has been developed by Maschinenfabrik Carl Zangs A.-G., Krefeld, Germany. It is applicable to the weaving of any type of material requiring from two to four shuttles.

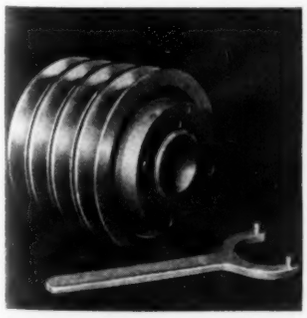
As may be seen in the diagram, an essential part of the device is a type of heddle, with three eyes, suspended behind the reed just outside the selvage. The heddle is supported and raised and lowered by the shuttle boxes. Three strong threads extend from the breast beam to the loom-beam stand, each passing through a different eye of the heddle. The slotted shape of the eyes permit the threads to lie flat over the race plate when the boxes are in their lowest position.



Now suppose the top shuttle has completed its picks and the boxes are raised to bring the second shuttle level with the race plate. The filling from the first shuttle is raised by the top string. If now the boxes are raised to bring the third shuttle level with the race plate, the filling from the second shuttle is raised by the second or middle string. In like manner, the filling from the third shuttle is raised by the third or bottom string. Thus the danger that one filling will be caught and dragged in by another is minimized.

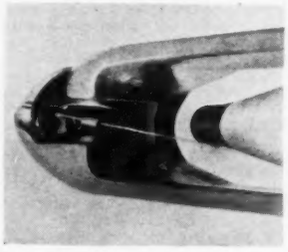
Improved Sheave

Allis-Chalmers Mfg. Co., Milwaukee, Wis., announces a development in power transmission, known as the Vari-pitch Texrope sheave, so constructed that pitch diameter, by means of a simple adjustment, can be changed to give speed variations as high as 15 to 25% per sheave. If both sheaves in the drive are of the new type, the range of variation can be doubled. This sheave is made in both stationary- and motion-controlled multi-groove types. The first is recommended for applications requiring occasional changes of speed. The second is for applications requiring frequent quick changes within the full speed range while the drive is in operation. The new transmission device is designed especially for use with V-belt drives employing several sets of sheaves. All the features of the regular Texrope line are retained in the Vari-pitch sheave.



Twin-Grove Shuttle

In an effort to end weaving troubles caused by unthreading, looping, or breaking of filling when it wiggles out of the



shuttle eye, Draper Corp., Hopedale, Mass., has developed the Stimpson twin-groove (or twin thread-track) shuttle. An innovation in shuttle construction is the new block containing two thread grooves designed to prevent mispicks. One of these grooves is made lower than the other, so that on the first pick after a bobbin change the yarn is drawn under the new wide eye-point and stepped down to the lower groove. At the start of the next pick it is forced into the side eye. Should the yarn chance to jump this side eye, it holds in the second groove—to return on the next pick from the left, without impairing the weave. Also emphasized is a replaceable cast-iron eye with steel scroll into which the thread cannot easily wear a cut, and which will not jam in a trapped shuttle. A securely attached shuttle spring keeps the bobbin in line with the eye. Advantages cited for the new shuttle include elimination of first-pick fork failure and reduction of stops due to weak filling, bad bobbins, poor yarn packages, misthreads, jammed or cut eye, or loose spring.

Centrifugal Pumps

Lawrence Pump & Engine Co., Lawrence, Mass., recently announced a line of single-stage centrifugal pumps, known as Black Arrow. These pumps are of the well-known Vortex double-suction, horizontal split-casing type and are available in sizes from 2 to 14 in. inclusive, for capacities 30 to 10,000 g.p.m. and for heads to 300 ft.

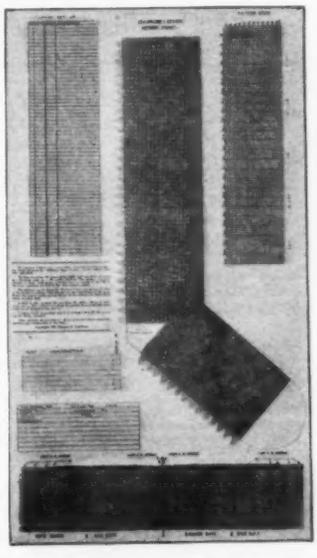
Changes in Flexible Coupling

Changes in the design and material of the Francke flexible coupling are announced by John Waldron Corp., New Brunswick, N. J. These changes include the following: all coupling flanges are now made of forged high-manganese-alloy steel, except for the larger sizes which are molded of semi-steel; in place of dry bushings, moving parts are fitted with self-lubricating, wax-impregnated bronze bushings which offer minimum resistance to the end-wise movement of the shafts of the connected machines when under load; highly polished bearing surfaces provide a large contact area. An innovation is the design of the cross pins by means of which the crucible-spring-steel laminations are held within the keepers. This is accomplished by means of a special process, whereby the ends of the pins are expanded into the tapered recesses making it virtually impossible for them to come loose. The center portion of the pins is said to retain a glasslike hardness.

Hosiery Design Chart

A convenient chart for use in designing and recording fancy patterns and constructions for children's fancy hosiery and for anklets and boys' golf hose has been developed by Herman E. Crawford, hosiery and machine designer, P. O. Box 1323, Greensboro, N. C. The chart is shown here greatly reduced in size, as the copies sold by Mr. Crawford measure 28 in. tall by 17 in. wide.

The hose form, seen in the center of the chart, is divided into squares by horizontal and vertical lines and contains 100 squares horizontally. Thus the form represents the stitches or loops in one side of a stocking made on a 200-needle machine. The horizontal lines extend to the left of the form in points, each point containing twelve lines and representing one link in the main pattern chain. It will be evident that the pattern can be drawn in the hose chart just as it is to look in the finished stocking. After the pattern has been drawn, the jack or sinker set-up is recorded in the

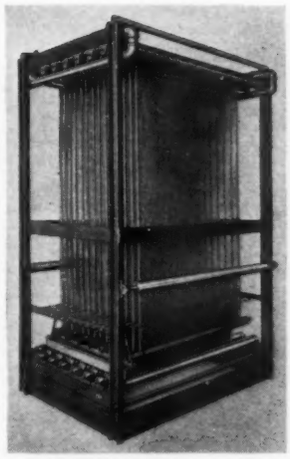


jack chart shown below the hose form.

A form is provided in the upper right-hand corner for recording the pattern-drum, trick-wheel, or disk-wheel set-up. In the upper left-hand corner is a chain form so arranged that all the moves can be clearly recorded. Other sections of the Crawford chart, which has been copyrighted, provide for the recording of general information about the pattern and construction of the hose.

Cooling and Conditioning Machine

R. L. Sjostrom & Co., Inc., Lawrence, Mass., announces a new type of cooling and conditioning machine for piece goods. The machines are used after any hot process, such as tenters, dryers, calenders, rotary presses, printing machines, etc., to restore the natural moisture content which has been removed by heat, pressure, or a combination of both. The cloth runs up and down over ball-bearing rolls, passing close to but not touching curtains of water flowing down vertical screens, a curtain of water between each layer of cloth. Thus, the cloth is exposed on both sides to wet surfaces and is given an opportunity to regain the natural moisture content which has been driven off by the last drying process. As the cloth rolls run very freely in ball bearings, there is no necessity to drive these rolls, the cloth being pulled through, under no tension, by the winder or folder.



In most cases, the machines are installed directly back of the last drying process, and the existing winder or folder is moved forward to allow for the installation of the cooling and conditioning machine. Advantages cited are that the goods are delivered in folds or rolls perfectly cold, with the natural weight restored and improved in handle, appearance and finish. It is emphasized by the manufacturers that this is essentially a natural process; no liquid water or drops, however small, are deposited on the cloth. On the other hand, the cloth will absorb only that moisture which it is capable of holding and cannot take on any more moisture than its normal content, due to the design of the machine.

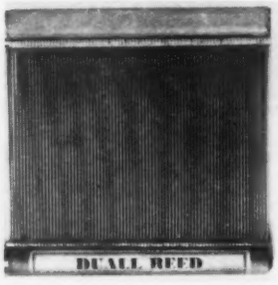
The machines are built in standardized units of 35 yd. capacity up to any width. The frames are made of structural steel, electric welded; rolls are made from Duralumin operating in self-aligning bearings; all metal parts are Udelyte treated to prevent rust. A special aluminum header with foolproof overflow provides the water feed for the curtains. There is no possibility of splash or drops of water getting on the cloth.

Steam Trap

A "standardized" steam trap is announced by Yarnall-Waring Co., Chestnut Hill, Philadelphia. This trap, known as the Yarway Impulse Trap, is factory set for all pressures from 0 to 400 lb. Manufacturers assert that six sizes serve all needs, and can be used interchangeably, size for size, with any other trap in the plant. Operation of the trap is based on the difference in flow characteristics of steam and water moving through two orifices with a chamber between. Movement of the valve is governed by variation in pressure in the space above the valve, caused by

changes in the temperature of the condensate. The discharge varies with condensate load as follows: small condensate load discharges continuously through control orifice without lifting main valve; medium condensate load discharges intermittently with the main valve opening and closing at short intervals; heavy condensate load discharges continuously with valve wide open.

Construction features include body of cold-rolled steel, valve and seat of Monel metal, and bonnet and cap of Hex Tobin bronze. The only moving part in the trap is a single valve. Air binding is said to be entirely eliminated and no priming is necessary.



Improved Loom Reed

Excelsior Loom Reed Works, 40 Central Ave., Pawtucket, R. I., has developed a new loom reed, known as Duall. Features include the following: standard pitch band set-up gives standard-sized rib to fit lay groove and to secure proper dent spacing over entire reed length; a soldered-in spring inside each rib is designed to reinforce each dent and assure accurate spacing and alignment; position of soldered spring permits easy straightening or replacing of dent in event of a smash, and repairs can be made with pliers and light soldering-iron without removing reed from loom; spring is soldered in a special machine to insure even dent position and tension; reed surface is exceptionally smooth as a result of a special finish.

Corrosion Control

Development of sodium chrom glucosate, an alkaline organic chromate for the control of corrosion in brine, condenser, and other aqueous systems where water is not used for human consumption, is announced by D. W. Haering & Co., 3404 Monroe St., Chicago. This new chemical is designed to provide efficient corrosion control in brine systems between pH 6 and 12. It may be used in quantities of 50 lb. per 1,000 cu.ft. of calcium brine and 100 lb. per 1,000 cu.ft. of salt brine. Approximately 1 lb. per 20,000 gal. condenser water is required for chromate protection. This chromate requires no adjustment before introduction and is said to be safe for use in open systems. Manufacturers assert that use will not cause development of chrome itch. It is available in 150 to 500 lb. drums.

Improved Meters

Bailey Meter Co., Cleveland, Ohio, has added several new devices to its line of control instruments. Included in these developments are an adjustable orifice, an air-operated combustion control, and a cabinet-type steel meter panel.

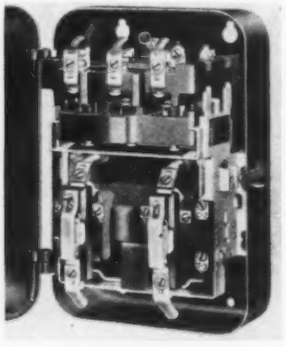
The new orifice is similar to a hydraulically operated gate, except that in place of the gate is a sharp-edged orifice segment with accurately determined coefficients. Installed in a pipeline and connected with a recording and integrating fluid meter, this orifice greatly widens the range of flow accurately covered by the meter.

The combustion control was developed to maintain steam pressure and furnace draft with maximum furnace economy. To accomplish this, the demand for steam is measured by variations in steam pressure and the rate of combustion is varied accordingly by the simultaneous control of fuel and air. It is known that the relationship between air supply and fan speed or damper position is inconsistent, as is the relationship between fuel supply and stoker feed, feeder speed or gas valve position. In order to overcome such inconsistencies, this combustion control, by means of frictionless free-floating air pilot valves embodied in all Bailey recorders of this type, utilizes the steamflow-airflow relation of the boiler meter to readjust fuel or air supply.

The meter panel is made of one-piece sheet-steel plate and is equipped with door to protect meter and control connections. The doors are provided with a 3-point locking mechanism and a substantial cylinder lock. Self-supporting construction facilitates installation.

Across-the-Line Motor Starter

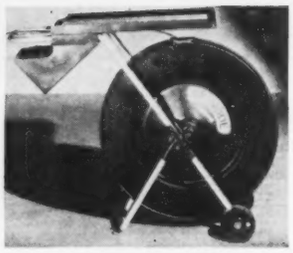
For general purpose installations, a new across-the-line motor starter has been announced by Condit Electrical Mfg. Corp., Hyde Park Station, Boston. This starter, designated as Type A-32, is rated at 25 hp. at 440 and 550 volts, 15 hp. at 220 volts, and 7½ hp. at 110 volts. Emphasis is placed on a new temperature-overload relay designed on the melting-alloy principle. Greater accuracy is said to be obtained by total inclosure of the relay in a molded case. Undervoltage is provided. Other features include extra-heavy silver contacts, vertical make-and-break, short-stroke mechanism, and multi-break



arc-prevention principle. The starter is sturdy and compact and is inclosed in a pressed-steel case equipped with knockouts for conduit connections. A pushbutton device furnishes remote control.

Automatic Reel For Strapping

Featured in the new metal-strapping reel offered by Signode Steel Strapping Co., 2600 N. Western Ave., Chicago, is a coil control designed to hold strapping tightly and release it as needed. This reel, of all-steel and tube construction, is available in three combinations: No. 10 includes a stand for seals, tools or small shipping units, and is equipped with wheels for portability; No. 9 is without the stand; and No. 8 has neither stand nor wheels. The last-named model is extremely steady and is recommended for stationary use.



Pumps and Power Equipment

Worthington Pump & Machinery Corp., Harrison, N. J. recently announced a number of additions to its line of pumps and power-plant equipment. Included in these new developments are a line of automatic condensate return units, an improved line of centrifugal fire pumps, a steam-booster compressor, two large Monobloc centrifugal pumps, and a self-priming centrifugal pump. The line of condensate return units, consisting of 54 sizes and types, has ratings from 2,000 to 40,000 sq.ft. of direct C.I. radiation or equivalent; pump capacities range from 3 to 60 gal. per min.; motors are operated automatically by the condensate, which flows by gravity into the storage tank where it trips a float switch at a predetermined depth. The centrifugal fire pumps, of the single-stage volute type, are built for direct connection with electric motors, steam turbines, diesel or gas engines. The steam-booster compressor is designed to take steam from existing boiler systems, raise its pressure beyond the capability of the boiler itself, and distribute it to points of demand; it is said to be especially applicable to processes where a steady definite temperature must be continuously maintained. The new Monobloc centrifugal pumps, 3 in. and 4 in., are similar in design to the smaller units; pump and motor are bolted to one rigid base; the impeller, containing renewable wearing rings and balance rings to eliminate end-thrust and put stuffing box under suction-pressure only, is mounted directly on the motor shaft. The automatic centrifugal self-priming pump is designed to prime itself when necessary through the use of a positive primer placed on the shaft with motor and pump; there are no valves, no floats, and no recirculation of water; the only requirement is a reasonably tight suction line.

Business Literature

Zeolites. Permutit Co., 330 West 42d St., New York. Bulletin, "Zeolites," containing detailed description of zeolite mining, processing, manufacturing, and uses. Includes a large number of photographic illustrations.

Air Conditioning. B. F. Sturtevant Co., Hyde Park, Boston. Two catalogs describing line of speed heaters and unit ventilators. Includes photographs, diagrams, and engineering data.

Flowmeters. Foxboro Co., Foxboro, Mass. Illustrated folder describing line of flowmeters.

Phenol Fiber. Continental-Diamond Fibre Co., Newark, Del. Illustrated 46-page catalog designed to acquaint industry with the properties of Dilecto, a laminated phenolic material with a unique combination of insulating and mechanical properties. Catalog describes manufacture, specifications, and uses of the plastic.

Magnifiers. Bausch & Lomb Optical Co., Rochester, N. Y. Catalog describing line of microscopes, readers, magnifiers, etc.

Stainless Steel. Chemical Foundation, Inc., 654 Madison Ave., New York. Illustrated 47-page booklet describing development, types, and uses of Stainless Steel and listing companies licensed by the Chemical Foundation to manufacture Stainless Steel under the Strauss patents.

Modernization. Federal Housing Administration, Washington, D. C. Booklet "Loans up to $50,000," outlining advantages of modernization and procedure to obtain loans for that purpose under the National Housing Act.

Starch and Dextrin. National Adhesives Corp. 820 Greenwich St., New York. Booklet discussing manufacture of various types of starches and dextrins.

Throwster Tints. United States Testing Co., has prepared a leaflet of instruction for use of certified throwster tints in identifying S and Z twist yarns; also gives combinations for use under mercury vapor lamps.

Time Switches. General Electric Co., Schenectady, N. Y. Bulletin containing description and specifications of general-purpose automatic time switches, Types T-17 and T-27.

Boiler Plant Equipment. Combustion Engineering Co., Inc., 200 Madison Ave., New York. Condensed bulletin describing line of boilers, steam generating units, stokers, pulverized-fuel systems, and heat-recovery equipment. An additional folder has been issued devoted to the C-E stoker unit applicable to all types and sizes of boilers to 400 hp.

Gear Motors. Allis-Chalmers Mfg. Co., Milwaukee, Wis. Leaflet 2203 describing eight types of compact, self-contained speed reducers, with integral or attached motors to provide low-speed drives with high over-all efficiency.

Bearings. SKF Industries, Inc., Front St. & Erie Ave., Philadelphia. Illustrated 32-page catalog describing ball- and roller-bearing transmission appliances, and containing load ratings and diagrams of mountings for ball- and roller-bearing pillow blocks, flanged housings, take-up boxes, post and drop hangers, floor stands, replace boxes, locknuts, and lockwashers.

Silk Testing. Silk Grading & Testing Laboratories, Inc., 22 West 26th St., New York. Booklet describing routine methods of testing raw silk for its commodity value as approved by the National Federation of Textiles, Inc. Also describes quality control for broad silks, velvets, ribbons, tie silks, etc.

Unit Heater. Unit Heater & Cooler Co., Wausau, Wis. Leaflet devoted to grid unit heater as applied to the textile industry.

Stretch Control. Saco-Lowell Shops, 147 Milk St., Boston. July issue of *Saco-Lowell Bulletin* carrying article on slasher stretch-control device. Also destribes the world's first complete long-draft mill, Gayle plant of Springs Cotton Mills.

Humidity Regulation. Parks-Cramer Co., Fitchburg, Mass. August issue of *Parks Parables* containing article on the Psychrostat as related to automatic humidity regulation.

Control Instruments. Foxboro Co., Foxboro, Mass. Booklet describing line of control instruments.

Feeler Motions. Crompton & Knowles Loom Works, Worcestes, Mass. Folder describing two new feeler motions, Nos. 21 and 23.

Pumps. Lawrence Machine & Pump Corp., 371 Market St., Lawrence, Mass. Bulletin 204 describing the Lawrence high-duty multistage type pumps.

Metal Belting. Link-Belt Co., 910 S. Michigan Ave., Chicago. Exaggerated replica of telegram, "Link-Belt Service Gram," calling attention to machine shop and sheet-metal plant at Atlanta, Ga., equipped to make duplicate machinery and in general serve southern territory.

V-Belts. Gates Rubber Co., Denver, Col. Simplified 48-page book on installation and operation of V-belt drives; also section on the care of these drives.

New Publications

Three Monographs on Color: International Printing Ink Corp., New York; $10.

These three volumes will prove invaluable to everyone to whom color is important in his business. The first monograph outlines the fundamentals of color chemistry; the second presents the subject from the viewpoint of the physicist; together they serve as an introduction to the third volume—"Color in Use." This third monograph will be welcomed to all textile manufacturers who make use of color in designs, packaging, or advertising. In a brief eighteen pages of illustrated text it gives many practical rules for the effective use of color. In addition, it contains ten pages of illustrations carefully executed in full color showing a wide variety of color relationships. The monographs advance no new "theories" of color, but do bring up to date the new knowledge of color revealed by recent scientific investigations, including latest practice in color measurement, nomenclature, etc. They were prepared by research laboratories of the International Printing Ink Corp., with the assistance of internationally known physicists, chemists, and designers.

Silk and Mixed Goods, by Arthur H. Schnell; published by the author, P. O. Box 2815, Philadelphia, Pa.; 2 volumes, $10.50.

Mr. Schnell has written a very comprehensive treatise on the analysis and construction of silk goods and mixtures, including cost calculations. He has taken great pains to explain matters in elementary detail in order that the novice, as well as the experienced man, may understand them; although it must be said that a little better knowledge of editorial matters would have made his task easier and rendered the result to some extent more serviceable. The book contains a mass of mathematical detail to check the accuracy of which would be almost as great an undertaking as was writing the book in the first place; but this reviewer can state that in the case of such calculations as he has had an opportunity to check, he has had no fault to find, once he has succeeded in grasping the method employed by the author. No doubt many silk men will welcome the short cuts described in this book written by a practical fabric analyst of very considerable experience.

The construction of cloth on the basis of yarn diameter, while employed to a considerable extent and to good advantage in the woolen field, has been little attempted by silk men. Therefore the author pays particular attention to an explanation of this unfamiliar system and asserts that silk men should find little difficulty in adopting it.

Chapters are devoted to such subjects as yarn numbering, selecting the grade of raw silk, testing twist, determining the reed width, calculating warp take-up, entering warps, etc. Cross-sectional diagrams of fabrics are shown to explain the effects of weaves on the cloth. Leno weaves, velvet weaves, and jacquard weaves are discussed, with others more simple in character.

Finishing of Wool Goods; J. & J. C. Schofield; John Schofield, Kirkburton, Huddersfield, England; 1935; 798 p.; 30s.

The predecessor of the present book, "Cloth Finishing, Woolen and Worsted," published in 1927, was generally recognized in England as a standard treatise on finishing of wool goods. In the preparation of this new volume, the authors have completely revised the material contained in the earlier text and have added a large amount of new data. As a result, the book covers practically the entire field of wool goods processing—exclusive of dyeing—and is thoroughly up to date. The general aim of the authors has been to treat the subject of cloth finishing as a practical art based on scientific principles. At the same time, detailed instructions are given for carrying out the various operations, and the engineering phases have not been neglected. To a considerable extent, the book is based on the authors' personal experience in research and consulting work.

The equipment and methods employed in the United States differ considerably in detail from those described by the authors. This fact does not detract from the usefulness of the book as a general guide to wool finishing operations, but should be borne in mind by the reader who is interested in obtaining precise information on the routine followed in processing specific types of fabrics.

Davison's Textile Blue Book (July, 1935); Davison Publishing Co., New York; office edition, $7.50; handy edition, $5.00.

The latest edition of this directory of the textile industry lists 8,437 textile mills and dyers and 15,423 dealers. The office edition contains 1,500 pages and the handy edition 1,320 pages. Indicative of the rate of change in the industry is the publisher's statement that whereas corrections in lines ordinarily average 20% from year to year, this year they amounted to over 60%.

The listings are carefully classified and the following are the principal subdivisions: cotton mills; woolen and worsted mills; rayon and silk mills; knitting mills; jute, linen and flax mills; Canadian mills; Mexican mills; dyers and finishers; mills with dye houses; commission merchants; converters; yarn dealers; raw, thrown and rayon silk firms; cotton dealers (both domestic and foreign); cotton warehouses; wool dealers; linter dealers; waste dealers and manufacturers; wholesale rag and remnant dealers; textile supplies; new textile mills; classified directory of mills; textile associations.

Chemical Guide-Book—1935; Chemical Markets, Inc., New York.

The eleventh edition of this buyers' guide of chemicals contains data on the chemical and physical properties, uses, grades, containers, shipping regulations, etc., of approximately 1,500 products, including about 150 compounds not listed hitherto-fore. The statistical section has been revised to give high and low prices for the years 1933 and 1934.

Business News

Draper Corp., Hopedale, Mass., has started up the former plant of **Standard Looms, Inc.,** Spartanburg, S. C., which it purchased last June, and will make a selected list of loom repair parts for its southern warehouse. All repair parts will now be made from original drawings and finished by machines and jigs that are duplicates of those at Hopedale, the patterns and castings bought with the Spartanburg plant having been scrapped. The company will maintain its warehouses at Spartanburg and Atlanta as usual.

H & B American Machine Co., Pawtucket, R. I., on Oct. 1 opened offices at 1201-1203 Johnston Bldg., Charlotte, N. C., in charge of J. Walter Rimmer, who has been connected with the company for 26 years. Prior to that Mr. Rimmer was associated with prominent textile machinery firms in England.

J. W. Rimmer

Associated with him in the new office are Fred Dickinson of Rockingham, N. C., and Fritz Zweifel, who has been transferred from the Atlanta office. This company has been supplying preparatory and spinning equipment to mills in the Carolinas for over 40 years. In addition to offices in Pawtucket and Boston, branch offices are maintained in Atlanta, Ga., in charge of J. Carlile Martin.

James Hunter Machine Co., North Adams, Mass., has appointed Robert Welsh to take over the Philadelphia sales territory vacated by the death of Mr. Arran. Mr. Welsh was with James R. Foster & Sons, Philadelphia, for many years and has a wide knowledge of woolen and worsted manufacture.

Steel Heddle Mfg. Co., Philadelphia, has acquired a large interest in **Atlanta (Ga.) Harness & Reed Mfg. Co.,** and will use the new plant for experimental purposes in the development of new and improved products as well as to continue the production of both cotton and steel harnesses. For the present, the Atlanta Harness & Reed Mfg. Co. will maintain its own selling arrangements and will carry on independently. Guy P. Carmichael, for a number of years connected with the Atlanta company, has been appointed general business manager. Steel Heddle Mfg. Co. already operates branches at Greenville, S. C., and Montreal, Canada.

Saco-Lowell Shops reports that Frank E. Rowe, Jr., who for the last three years has represented them in the southern States as sales engineer, with headquarters at Atlanta, has returned to the company's shops in Biddeford, Me., where he will be intimately associated with the research engineering department.

Hemphill Co., Pawtucket, R. I., has appointed Alfred L. Hutton, Jr., as vice-president in charge of production and sales, according to announcement by Robert H. Lawson, president. Mr. Hutton has been with Hemphill Co. for 20 years, serving most recently as assistant manager and prior to that as assistant director of engineering.

Davis & Furber Machine Co., North Andover, Mass., which has manufactured and sold tape condenser tapes under the brand name "Marathon" for many years, has now extended the brand name to rub-aprons, card-clothing, and all card-room supplies.

Sipp-Eastwood Corp., Paterson, N. J., has elected the following officers: president, William Toll; secretary and treasurer, C. P. Furman; assistant general manager, C. L. Wright.

Armstrong Cork Products Co., Lancaster, Pa., has appointed W. T. Coker, Jr., formerly with Pacific Mills, as a member of the sales staff. Mr. Coker will make his headquarters at Charlotte, N. C., and his territory will include a large part of the State.

Walker Engineering Co., Inc., Gastonia, N. C., has been chartered to buy and sell new and used textile machinery, equipment and supplies. Authorized capital stock is $100,000 and subscribed stock is $300. Interested parties include Jerry W. Walker, D. E. Walker and John P. Houren, of Gastonia.

Thomas W. Dunn Co., New York, manufacturers of gelatine, now offer the trade advice on rayon soaking and slashing problems through a newly established textile division in charge of W. L. Bentley, fabric technician.

Borne Scrymser Co., New York, has appointed Donald White as representative in Texas, Kentucky, Louisiana, Arkansas, Mississippi and parts of Tennessee. Mr. White will market the Breton Minerol process for spraying cotton; Meon for conditioning filling yarns; Meon-Q for conditioning garnetted cotton and other reclaimed fiber stocks; Versieol for textile finishing. Mr. White's address is 2269 Jefferson Avenue, Memphis, Tenn.

Ciba, Inc., New York, dyestuffs and chemicals, will open a southern office, warehouse and laboratory in Charlotte, N. C., on Jan. 1, 1936, according to announcement by S. L. Hayes, Greenville, southern manager for the company.

Harris Mfg. Co., Atlanta, Ga., has appointed Luther Brooks as salesman for its reeds and slasher cones. Mr. Brooks has resigned as assistant to the head of the weaving department in Mill No. 5 of Georgia-Kincaid Mills, Griffin, Ga.

Scher Bros., Paterson, N. J., chemicals, moved on Oct. 1 from their former location at 190 16th Ave. to a new and larger plant and warehouse at 21st. Ave. and Railroad Ave., Paterson, where they will have railroad siding facilities.

Solvay Sales Corp., New York, has opened new branch offices at Texas Ave. and Austin St., Houston, Texas, and at 212 S. Tryon St., Charlotte, N. C.

Matthews Morse Sales Co., Charlotte, N. C., announces that W. E. Outen has been added to its sales force and will cover the North and South Carolina territory.

Kron Co., Bridgeport, Conn., has appointed Engineering Sales Co., Charlotte, N. C., as its representative in the two Carolinas. Recently this company appointed R. S. Kerr Co., Atlanta, Ga., to represent it in Georgia, and Ebbert & Kirkman, Birmingham, Ala., to represent it in Alabama.

American Optical Co., Southbridge, Mass., has acquired a substantial interest in **Spencer Lens Co.,** Buffalo, N. Y. The Spencer business will be continued with the same name, policies, and personnel.

TEXTILE WORLD'S

Cotton Digest

THE accomplishment of the cotton textile industry in maintaining over 97% adherence to former basic code wage and maximum hour schedules exceeds the most optimistic expectations. Goldthwaite H. Dorr, president of the Cotton-Textile Institute, certainly is not guilty of over-statement when he says that the industry takes justifiable pride in this record "which must be reassuring to its employees, its customers and the general public."

It is so reassuring, in fact, that the industry has established itself definitely as one in which, despite its high degree of decentralization, successful coordinated effort is entirely feasible. That has been subject to question many times in the past; it is no longer.

We are confident, moreover, that the industry will not retreat from its position now that it has proved to itself and to the public what it can do.

Incidentally, in addition to moral satisfaction, there will be dollars-and-cents return.—*Editor.*

Over 97% Mills on Former Code Basis

Over 97% of the cotton textile industry, measured by active spindles, is, operating on former basic code wage and maximum hour schedules, according to a report submitted to the executive committee and board of directors of the Cotton-Textile Institute by Goldthwaite H. Dorr, acting president. Analysis of the report showed that, in addition to voluntary maintenance of the code minimum wage and 40-hour work week standards by 97.21% of the industry, an even greater percentage—98.56%—are not exceeding the two-shift maximum of the code, and that 95.77% of the spindles in the industry are being operated in conformity with both basic code labor and machine-hour limitation provisions. It was pointed out in the report that most of the mills which have deviated are small and financially embarrassed units.

•

How to Postpone Paying Process Tax

Method of obtaining an extension of time for payment of the processing tax on cotton was explained last month by the Treasury Department. The statement, in part, follows:

"Under the provisions of Section 19 (B) of the act, as amended, the secretary of the treasury is authorized to permit postponement of payment of not exceeding three-fourths (except in the case of cotton) of the amount of the tax for a period not exceeding 180 days. The secretary of the treasury is further authorized to permit, for a period not exceeding 180 days, the postponement of payment of the entire amount of tax, in cases in which he authorizes the payment of such tax each month on the amount of the commodity marketed during the next preceding month. In the case of cotton under the provisions of the Department of Agriculture Appropriation Act, 1936, approved May 17, 1935, the time for payment of the tax on the processing of cotton may be postponed for a period not to exceed six months from the time fixed for filing the return.

"Postponement will not be granted on a general statement of hardship, but in each case there must be furnished a statement of the specific facts showing what, if any, financial loss or sacrifice will result if the postponement is not granted.

"Authority for granting such postponements is hereby delegated to the commissioner of internal revenue, who will issue appropriate instructions to collectors of internal revenue, to whom applications for postponement of payment of the tax should be submitted."

•

Combed Spinners Re-elect Officers

The Southern Combed Yarn Spinners Association re-elected officers at its annual meeting last month for the first time in its history with the exception of the first year when the first president was re-elected as his term had been a short period of organization. The present action was taken in the belief that it would be a mistake to make a change in officers at what was described in the resolution as "this crucial time." The officers include W. H. Suttenfield, president; Arthur M. Dixon, first vice-president; R. B. Suggs, second vice-president.

Members at the meeting expressed the belief that the time has come to turn a buyers' market into a sellers' market. Low stocks and strong potential demand, with most mills sold ahead, contribute to this position.

•

Crop Forecast Sags

Cotton crop forecast released Oct. 8, on condition as Oct. 1, was 11,464,000 bales, a drop of 25,000 bales from the forecast of 11,489,000 bales for the crop as of Sept. 1.

Mill on Permanent One-shift Basis

Officials of Groves Thread Co., Inc., recently announced that the mill would operate permanently in the future on a one-shift basis. "This policy," it was said, "has grown out of the conviction that the combed spinning industry cannot support night operation and that profitable operation for the industry cannot possibly develop through overproduction and saturation of the market." As to the status of displaced workers, it was pointed out that "the problem of dropping the night shift has involved the rehabilitation of 100 families, and this the company has gradually effected over the past three or four years as rapidly as families could get relocated, either on farms or in other jobs, transportation being furnished in many cases."

•

"Cotton Discriminated Against"—Roberts

"Japan collects $100,000,000 per year from us for her silk and scours the world for other growths of cotton. Jute and sisal, made by pauper and peon labor of India and Mexico, pays no tax and usurps the market, particularly of southern cotton mills," declared Scott Roberts, president of the Cotton Manufacturers' Association of Alabama, in an interview last month with the Associated Press.

•

August Statistics

Statistics of particular interest to cotton manufacturers, showing August operations and the raw material situation, were:

Spindle activity	76.4% capacity, or 5,545,241,375 spindle hours
Cotton consumed	408,410 bales
Cotton exported	241,284 bales
Cotton imported	8,002 bales
Cotton ginned to Sept. 16..	2,318,395 bales

July operations for comparison:

Spindle activity	73.5% capacity, or 5,157,527,985 spindle hours
Cotton consumed	391,771 bales
Cotton exported	276,622 bales
Cotton imported	6,707 bales
Cotton ginned to Aug. 1 ...	94,241 bales

•

Yarn Prices Up

Cotton yarns continued strong with prices up 1c. over the month. September sales were reported to be the best in several years. Nearly all types of yarn sold well with particular emphasis on carded weaving and single combed. Numerous contracts called for delivery to the end of the year, and there are instances of next spring shipment. January and February buying was a feature.

•

Cloth Market Firm

Diversification of demand and frequent purchases of quick and nearby goods against actual needs featured

September gray goods market activities. Prices tended slightly upward despite something of a slump in tempo and volume during the last week. Settling the processing tax controversy in the bag trade contributed to an emphasis in demand for sheetings. Some mills reported sales to be 300% of production the final week. New York declared no wide goods are available before January.

•

Cotton Industry Notes

Japan imported 43,000 more bales of cotton during July than June, according to the Department of Agriculture. Total imports for July were 295,423 bales, of which 123,098 were American.

German imports of cotton textiles during the first half of 1935 were over $700,000 greater than during the corresponding period of 1934.

At a meeting of the board of directors of the Association of Cotton Textile Merchants of New York, Oliver H. Iselin, of Iselin-Jefferson Co., was elected to the vacancy caused by the resignation of John C. Borden. Elections to membership were confirmed for Carolina Cotton & Woolen Mills as of July 1, and for Kendall Mills as of Aug. 1.

Over 500 textile men are expected to be present at the annual meeting of the Carolina Yarn Association to be held Nov. 1 and 2 at Pinehurst, N. C.

Proposed revisions of two Federal Specifications for partially shrunk (CCC-D-151) and unshrunk (CCC-D-156) indigo blue denim have been published for comment and criticism by the Procurement Division of the Treasury Department, Washington.

Proposed Federal Specifications for laundry padding composed of stitched cotton roving and for surgical adhesive plaster have been published for comment or criticism by the Procurement Division of the Treasury Department.

James F. White & Co., drygoods commission house and importer, established in 1849 and **Lamb, Finlay & Co.,** linen importer, established in 1859, will merge as of Jan. 1, 1936 into White, Lamb, Finlay, Inc., with headquarters at 54 Worth St., New York. George Bonar will be president and F. C. Larson and Peter Fletcher, vice-presidents.

Aberfoyle Mfg. Co. on Sept. 27 moved its Philadelphia office from 123 South Broad St. to Chester, Pa., where its plant is located.

Boger & Crawford, Philadelphia, has appointed W. C. Henderson as southern representative for the States of North and South Carolina and Virginia, with headquarters at the firm's mill at Lincolnton, N. C.

Japan will impose a voluntary curb on shipments of cheap cotton cloth to the Philippine Islands under the terms of a "gentleman's agreement" tentatively reached with the United States early this month. It is understood that consideration was given to the fact that Japan annually purchases large quantities of raw cotton from this country.

Bids on 30,000,000 yd. of cotton textiles were opened Oct. 8 by the Works Progress Administration.

Hooker & Sanders, Inc., New York, formerly Baird & Sanders, have elected Robert J. Hooker to the board.

COTTON IN THIS ISSUE

	page
Cotton Roads Now in Five States	65
Happy Days Coming Again for Cotton Industry	66
Japanese Efficiency in Mergers and Output	68
Brazilian Cotton Could Reach Par with U. S.	69
Employment Department Cuts Labor Turnover	76
Cotton-Roving Twist Chart	79
Rules of Color Harmony Improve Textile Designs	80
Honeycomb Pile Fabric Containing Cotton	84
Georgians Discuss Slashing and Weaving	88
Weave Effects with Colored Yarn	93
Thread Yarn Counts	104
Waste Conditioner	108
Twin-Groove Shuttle	109

Cotton Mill News

Samoset Cotton Mills, Talledega, Ala., has completed installation of new large-package long-draft spinning frames carrying approximately 5,000 spindles.

Bruck Braid Co., Los Angeles, Calif., has been established by Wm. W. Bruck at 1135 Wall St., to manufacture braids, cords, tassels and trimmings.

Muscogee Mfg. Co., Columbus, Ga., have installed the Borne Scrymser process for conditioning cotton.

Gainesville (Ga.) **Cotton Mills** recently completed the installation of 60 modern spinning frames.

Erwin Cotton Mills Co., Durham, N. C., is adding a second story to its bleachery. The addition will cost $25,000 and will provide 20,000 sq.ft. of additional floor space.

Irene Mills, Inc., and **Irene Finishing Works, Inc.,** Gaffney, N. C., properties have been purchased at a public sale by J. C. Fort, Spartanburg, S. C., attorney, representing textile mill interests in this vicinity, names temporarily withheld, which propose to place the mills in operation under new ownership at date. The properties were bid in for $15,000.

Hannah Pickett Mills No. 1, Rockingham, N. C., has had its spinning overhauled by Walker Engineering Co., Inc., Gastonia, N. C.

Valdese (N. C.) **Weaving Co.** has been chartered with capital of $250,000 by A. A. Shuford, Jr., treasurer of the Hickory (N. C.) Spinning Co., and associates, to operate the plant of the former Waldensian Weavers.

International Braid Co., Providence, R. I., has awarded contract for a new floor and machinery foundations. O. D. Purington Co., Inc., Providence, is doing the work.

The Baldwin Plant of the **Springs Cotton Mills,** Chester, S. C., has been changed to the **Gayle Plant** in honor of Walter Gayle, of Charlotte, N. C., southern representative of the Saco-Lowell Shops.

Jackson Mills, Welford, S. C., have begun operations in former mill of Manville-Jenckes Corp. ,at High Shoals, N. C., recently acquired in name of Alfred Moore, president and treasurer. Machinery has been reconditioned and improved.

Cotton Financial Notes

Raybestos-Manhattan Co., Bridgeport, Conn., has bought the Oakland Paper Mill at Manchester, Conn. The property was owned by C. H. Dexter & Sons, Windsor Locks, Conn., and will be used for experimental work in the development of new products. The firm has also bought the Multibestos Co., Walpole, Mass.

Bridgeport (Conn.) **Web Co.** has filed organization papers listing the following officers: President-treasurer, Benjamin R. Bresler; assistant treasurer, Louis Silvertone; and secretary, Anna Bresler.

Amoskeag Co. reports for the fiscal year ended June 30, 1935, net income of $489,243 compared with $507,783 in the preceding year.

Pepperell Mfg. Co. reports net loss of $438,062 for the year ended June 30, 1935, compared with a net profit for the preceding year of $1,607,685. Sales, at $28,986,092 for the recent year, were a high record for the company.

Lockwood Co., Waterville, Me., is running out its stock preparatory to shutdown and liquidation according to officials of the company. The company had failed in getting a tax abatement and the tax burden was regarded as insurmountable.

King Philip Division of the **Berkshire Fine Spinning Associates,** Fall River, Mass., will sell plant B. Liquidation will be accomplished during October.

Durfee Mills, Fall River, Mass., have discontinued operations and directors have voted to liquidate the mill. The plant has about 65,000 spindles.

Clark Thread Co., East Newark, N. J.—Former mill of this company at Passaic River and Central Ave., comprising a large group of buildings on 18-acre tract of land, vacated by company when it removed to Georgia a few years ago, has been purchased by the East Newark Realty Co., recently organized, which will remodel and improve the property for lease to different industries.

Wadesboro (N. C.) **Cotton Mills Co.** was recently purchased at auction for $20,100 by Thomas C. Cox, representing a group of associates.

Langley plant of **Aiken** (S. C.) **Mills, Inc.,** has been closed indefinitely, having lost nearly $150,000 during the last year, it is reported. Howard E. Hart, general superintendent of the three South Carolina plants of Aiken Mills has been transferred to New York. The plant at Bath is still in operation.

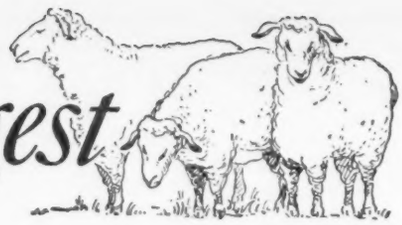
Lydia Cotton Mills, Clinton, S. C., recipient of a revised plan for reorganization under Section 77-B of the Bankruptcy Act, was forced to postpone reorganization activities when Government officials filed an objection to the effect that the plan does not conform with amendments by Congress to AAA and National Bankruptcy Act. It was contended that Lydia Cotton Mills should pay all processing taxes at once.

Wabasso Cotton Co., Toronto, reports operating profits of $809,370 for the year ending June 29, as compared with $752,875 for the previous year.

Neely-Travora Yarn Mills, York, S. C., will be sold at auction Oct. 24 by W. Bedford Moore, Jr., trustee. If no purchaser is found, the mill will be dismantled and marketable machinery sold.

TEXTILE WORLD'S

Wool Digest



THE woolen and worsted industry has two reasons for self-congratulation. The first is the remarkable come-back in activity it has made this year. After a disastrous year in 1934, when wool consumption was nearly 25% below that of 1933, a different act was put on in 1935. As a result, this promises to total up to one of the most active years in recent history.

The other good news is the remarkable degree of code conformance still being practiced by this branch of textile manufacture as revealed by a questionnaire. This reflects a very high type of self-government.

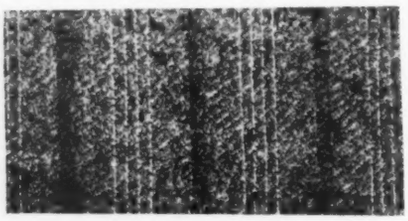
With these gratifying conditions as a background, and with a promotional program now in full swing, there seems to be no reason to be bearish on the future of the wool manufacturing industry.—*Editor.*

Enter Japanese Worsteds!

Japanese worsteds are being offered in the New York fabric market. Duty paid, the worsted suitings range upward from $2, and, in fineness of Australian stock and in general styling, are reported to compete more directly with British goods than with domestic. At $4 is a fine cashmere coating said to surpass anything of domestic production anywhere near the price. Tropicals are offered at $1.75 to $1.85. In general the goods are said to be about 30% below equivalent domestic or British offerings.

In two offices are to be found representative lines. Mitsui & Co. have a department headed by Thomas Barber to specialize on worsted piece goods, and Gus L. Rosenberg, with Rusch & Co., offers a diversified line from several Japanese sources. The lines are notable for the excellence of the stock and for the care in styling, the inspiration of which is definitely English. There is women's wear as well as men's wear but the latter is regarded as a better proposition at present.

Goods are sold against irrevocable letter of credit and about three months is required for delivery. It is understood that the Japanese manufacturers have stated their willingness to stand back of their goods and to adjust any reasonable claim made upon them. Already orders have been placed and extensive negotiations are pending. It is likely that some pieces will be cut for next spring's trade but clothiers will probably not identify their offerings to the consumer as Japanese.



Japanese suiting from line shown By G. L. Rosenberg

Already protests have been lodged in the trade against these imports from a low wage country, but it is pointed out that the only argument useful in Washington is proof of damage to the domestic industry and until the goods actually come in in quantity it will be hard to prove damage. Probable restriction to staples or semi-staples, the credit requirements, the time element in delivery and in delaying possible adjustments will all work against this business becoming large overnight. That it has strong potentialities must be admitted.

•

Overwhelming Adherence to Rules

Replies to the questionnaire concerning hours and wages have been received by the National Association of Wool Manufacturers from 330 mills representing approximately 77% of the total machinery of the industry.

"The returns show a most extraordinary and gratifying degree of adherence to the practices established by the Code, the majority of which are continued by the proposed Rules of Business Procedure," stated Arthur Besse, president.

Full compliance with the new Rules of Business Procedure is indicated by 282 returns. Of these, 238 report no change whatever from the old code regulations; 33 report no change except that there has been an increase in wages, and 11 report no change except for partial operation on a third shift of certain machinery which was limited by the Code but is not limited by the new Rules of Business Procedure.

Of the remainder, 25 report temporary or emergency lengthening of hours; 2 report partial decreases in wages; 4 report minor changes with Code Authority approval, and 1 mill reports general departures from Code standards. Five mills report they are not operating at the present time.

"Emergency lengthening of hours," said Mr. Besse, "should not be ordered without making application for a Code Authority certificate. This is essential if criticism on the part of employees and competitors is to be avoided. Such operation should in any case not be allowed to become chronic. A strict adherence to the 40-hour week would seem to be the best and only guarantee against the possible enactment of a compulsory 30-hour law."

•

Best Business in Years

The wool goods industry has acquired the heaviest back-log of orders it has had for many years. Trade is still active though delivery dates are getting farther and farther off and prices are rising. Spot demand for staples in men's wear and fancies in women's wear has brought inventories down to a low point. There is once again heard in the market suggestions of alloting goods or scaling down orders in order to get them within the compass of possible production. Mills are seeking to increase output and the whole picture is more optimistic than it has appeared for many years.

There were numerous price advances through September, and October began with announcements of gains of 2½ to 5c. per yard additional in many quarters. Buyers are trying to hold volume purchases under the $2.00 mark but that will be possible in some cases only by stepping down to lighter cloths.

•

Tops Gain 4c.

Wool tops were active through September with a sharp rise during the second week and a slight easing thereafter. Spots moved as follows: Aug. 30, 89½c.; Sept. 6, 91c.; Sept. 13, 95c.; Sept. 20, 94c.; Sept. 27, 93½c.; Oct. 4, 95c. Futures moved in harmony with this.

•

Rags Advance But Trading Lags

By early October wool rag prices had scored a fair advance but sales were not following and graders have found trade very dull. Fine white sweater clips were as high as 62c. Fine botany worsteds were strong at 37c. Old rags scored gains with blue serges at 13½c. and black serges at 12½c. Old white knits have been at 36 to 37c. The trade is confident that the trend will ultimately benefit reworks as wool becomes scarcer and higher priced.

•

Up Goes Mohair

An unusually sharp rise occurred during September in domestic mohair. Spot stocks had fallen to a low point and eastern buyers going into the Texas field for the fall clip found the growers strongly bullish. Early sales commenced around 42c. and the price mounted rapidly until 50c. was reached on adult hair and 60c. on kid hair. Texas hair in original bags is now quoted 50 to 52c.; Arizona and New Mexico, 46 to 48c.; Oregon, 48 to 50c. In graded hair the first combing is quoted 60 to 62c.; second combing 56 to 57c.; third combing, 50 to 52c.; good carding, 50 to 52c.; first kid, 70 to 75c.; second kid, 60 to

65c. The 20% rise in mohair has lifted prices on mohair yarns and mohair blends about 10%. The yarn price situation is likely to be irregular for a period as spinners are concerned about the reaction of their customers to this sharp advance. Mohair weaving yarns 2-20s are quoted $1.05 to $1.10; 2-24s, $1.15 to $1.20; 2-28s, $1.40 to $1.45.

•

Activity of Industry

Current statistics on wool consumption and mill activity follow, the activity percentage being based on single 40-hour shift, 5 days per week. July and August figures are based on four-week periods.

	July	August
Wool consumed, clean equiv.		
Apparel wool	23,575,000	26,592,000
Carpet wool	9,067,000	9,324,000
Looms (50" wider)	97.9%	107.5%
Carpet looms	66.2%	76.1%
Combs	127.7%	137.8%
Worsted spindles	83.4%	83.1%
Woolen spindles	120.7%	132.5%

Figures on active machine hours on first, second and third shifts indicates that the division of machinery by shifts in August was about as follows: Woolen spindles, one shift 38¾%, two shifts 42½%, three shifts 18¾%; worsted spindles, one shift 57%, two shifts 42¼%, three shifts ¾ of 1%; broad looms, one shift 27%, two shifts 70¼%, three shifts 2¾%.

•

Wool Industry Briefs

Blankets are going up. Kenwood recently advanced its Arondac 4 lb., 72x84, to $4.50 which was previously selling at $4.30 and opened at $4.20. The American Woolen Co. in mid-September made the third advance since opening. One number, which opened at 95c. a pound, went to $1.05 early in the summer, then to $1.07½ and now to $1.12½. There are predictions of a squeeze in blankets.

Summer clothing prices are unchanged to slightly higher for next season. Palm Beach lines have been opened at $10.00 to the retailer and $16.75 to the consumer, a rise of $1.00. Kuppenheimer's summer line starts at $12.75 as it did last year but high priced garments have been raised various amounts up to $1.00. Several other houses are showing lines unchanged in price.

New methods of testing the quality of pile floor coverings and the fineness of wool, proposed by Committee D-13, the textile committee of the American Society for Testing Materials, have been approved as tentative standards by the society's Committee E-10, which passes on what might be considered the "constitutionality" of standards proposed by other committees.

Boessneck & Co. moved on Oct. 1 to larger quarters on the 44th floor of the Nelson Towers, 450 Seventh Ave., New York.

United States Testing Co. is offering its facilities for selling worsted yarn on Certified Weight basis, since the principle of standard regain has been accepted by the trade.

Walter McCook, worsted yarns, has moved to 711 Arch St. from 117 North Fifth St., Philadelphia.

American Woolen Co. reports a six months' net profit of $501,015 compared with net loss of $585,020 for first half of 1934. There is an inventory reduction of $264,169.

Botany Worsted Mills is offering hand-knitting yarn and woven fabric for skirt which match exactly. The combination is said to be popular.

Ernest C. Morse, director of Associated Wool Industries, spoke on Sept. 24 before the directors of the National Wool Trade Association and the executive committee of the Boston Wool Trade Association.

Movement of raw wool in the Boston market continued heavy during September. Prices were strong.

Army shirting flannel (805,000 yds. of 10½ oz. wanted) drew bids on Oct. 3 from seven companies ranging from $1.189 to $1.378. The army bought 3,800,000 yds. of this material six months ago at an average of $1.22.

A fire in Australia last month destroyed 40,000 bales of wool according to reports.

Anny Blatt, Parisian specialist in hand-woven clothing is using a new kind of felt on costumes for revers, cuffs, collars and girdles. It is close shaven, soft and supple and lustrous like fine chamois leather.

•

Wool Mill News

Uxbridge Worsted Co., Macon, Ga., is installing Abbott circulating spindle winding.

Pacific Mills, Lawrence, Mass., is installing equipment for cleaning wool by the "Frosted Wool Process." This process was described in detail in the May, 1935, issue of TEXTILE WORLD by Prof. Barker of Lowell Textile Institute.

Prospect Mills, Inc., Lawrence, Mass., have been organized with capital of 1,000 shares of stock, no par value, to operate a local woolen mill, occupying the plant formerly a unit of the American Woolen Co. C. A. Maxwell is president of new company, and Alfred H. Avery, treasurer.

Fairview Mills, Valatie, N. Y., now idle, have not been sold according to Harry Solomon, manager and former owner. In our last issue appeared an item relative to the sale of "Fairview Knitting Mills." There is no mill of exactly that name. Max Weintraub has bought certain tax bills against Fairview Mills but cannot obtain a tax sale deed to the property for 18 months.

Muncy (Pa.) **Woolen Mills** have work under way on alterations and modernization, preparatory to starting up.

Gonic (N. H.) **Mfg. Co.** has sold at auction 33 pieces of real estate at Rochester, N. H., realizing $47,800 therefrom. The company's controlling interests also sold their empty mill property in South Windham, Me., for $1,100. The proceeds will be used in part to install new machinery in the mill at Gonic, it is said.

Centredale Worsted Co., North Providence, R. I., is operating under direction of William H. Lister of Lister Worsted Co., Stillwater, R. I., with privilege of purchase at end of six months.

Silver Lake Worsted Mills, Inc., Providence, R. I., have arranged for purchase of portion of former local mill of the Cleveland Worsted Mills Co., idle for a number of years, and will remodel and equip for new plant unit.

Bonin Spinning Co., Woonsocket, R. I., is awarding separate contracts for the construction of a dyehouse and mixing unit on Mendon Road.

Guerin Mills, Inc., Woonsocket, R. I., has awarded contract to the Pelletier Construction Co., 173 Bailey St., Woonsocket, for an addition to its mill on East School Street.

Hardwick Woolen Mills, Cleveland, Tenn., suffered a fire in its wool carbonizing department recently, and the damage was limited to that department.

Texas Woolen Mills Corp., Dallas, Texas (M. C. Cotton, vice-president), is reported as planning erection of a mill at San Angelo and another at Orange; also possibly a plant at Dallas.

Blue Ridge Co., Inc., Glasgow, Va., recently organized, affiliated with James Lees & Sons Co., Bridgeport, Pa., plans early installation of additional equipment at new local mill, lately placed in service, for increased capacity. Earl B. Morgan is general manager.

Stuart (Va.) **Blanket Mill,** closed for some time, has been acquired by the **Atlas Mills, Inc.,** New York, and will be remodeled and put into operation.

Badger Worsted Mills, Grafton, Wis., have approved plans for new one story mill addition, 30x50 ft., and will begin superstructure at early date.

WOOL IN THIS ISSUE

	page
Fabric Trends at Winter Fashion Preview	67
Let Finisher Know When You Use Mineral Oil	78
Cut Effects in Double Cloth by 3/3 Exchange	83
Honeycomb Pile Fabric Containing Mohair	84
Last Stretch on Road to Dress Fabric Standards	85
Weave Effects with Colored Yarn	93
Color in Wool Goods—New Lines for Women	96
Woolen Count Variations	104
Calculating Warp Contraction	105
Cooling and Conditioning Machine	109
Filling Thread Separator	109

TEXTILE WORLD'S

Rayon Digest

THAT the value of the statistical work performed by the *Textile Organon* of the Tubize Chatillon Corp. has been appreciated by the industry at large is evidenced by the fact that nearly all rayon yarn producers have cooperated by supplying figures on their own progress. Particularly since 1933 has this been demonstrated; since that time, it has been in order to refer to the *Organon* data as official.

Obviously, as a recent announcement points out, the publication thus outgrew its object as a single company's house organ. In fact, we have felt that Tubize Chatillon was performing a public service in continuing to publish it. Naturally, such sponsorship could not continue indefinitely.

Consequently, it is encouraging to learn from the announcement that the continuity of this work is promised by the organization of a new statistical and economic service bureau under the direction of Stanley B. Hunt, who has been editor of the *Textile Organon.* It is also encouraging to note that a new publication will appear under the more specific name of *Rayon Organon.*

As one who has dabbled in the compilation of rayon statistics for more than 15 years, we think we can appreciate the importance of this move to the synthetic fiber industry. We urge all producers to continue to support this effort, so vital as a guide to production policies.—*Editor.*

The Differential Shrinks

One of the phases of rayon price realignment which is attracting market attention these days is the changing picture with respect to the differential between viscose and acetate prices. The drastic rate at which this differential has been lowered is evident when prices are studied over a two-year period. In August, 1933, 150 denier acetate was selling at $1.00 while viscose 150/40 was selling at 65c., a differential of 35c.; in August, 1934, acetate was 70c. and viscose was 55c., cutting the differential to 15c.; in August, 1935, acetate was 60c. and viscose 57c., leaving a nominal differential of 3c. Producers selling both types of yarn cite this trend as confirming their contention that eventually acetates and viscose will be on a par as regards price.

•

Survey May End Barre Nuisance

Prospects for eventual elimination of the vexing "barre effects" in woven rayons strengthened substantially this month when plans for an exhaustive study of this subject were being put into effect. It was announced that a comprehensive survey to establish the cause of shading in rayon fabrics will be undertaken; the project will be jointly financed by the Textile Foundation and the Throwsters Research Institute. H. E. Bishop, executive secretary of the Institute said the undertaking was the result of a conviction among Institute members that study would reveal facts helpful to the solution of this problem. He added that throwsters, rayon yarn producers, dyers and weavers have offered use of laboratory faciilties for the task.

The shaded effects in rayon fabrics became almost a critical issue last spring; numerous firms lost money because of this evil and there was much controversy as to which of the four textile branches was responsible. The survey will be in charge of a research committee soon to be named and it is expected actual work will start late this month.

•

Abolition of Tax Aids British Staple

Market prospects for rayon staple fiber in Great Britain have expanded considerably as result of the recent decision of the Government to abolish the excise duty. This tax was first 6d. and later 3d. per lb. Its elimination was followed by a 1½d. reduction in staple prices by Courtaulds Ltd. The result is that Courtaulds "Fibro" yarn now is about 11d. per lb. against the old price of 15½d. and the lower level opens new markets among spinners who find the new price of this fiber compares favorably with the current prices of fine Egyptian raw cotton. Other advantages of the staple are that it can be run into the card without preparation and there is virtually no waste. The market both weaving and knitting is expected to be decidedly larger by the time Courtaulds complete the new plant, increasing their output to 20,000,000 lb.

•

Rayon Weavers Hold Annual Meeting

Current problems of the rayon weaving industry were considered at the annual meeting of the National Rayon Weavers Association which was held Thursday at the Harvard Club, New York. One of the chief matters on the program was the selection of a new chairman of the board of directors to succeed Percival S. Howe, who left the weaving industry recently to join Industrial Rayon Corp. Election of directors and reports were the other principal items scheduled.

•

Hunt Organizes New Rayon Service

Stanley B. Hunt, textile economist and editor of the *Textile Organon,* published by the Tubize Chatillon Corp., New York, announced Sept. 20 that he had organized the Textile Economics Bureau, Inc., a statistical and economic service bureau for the rayon industry. This bureau will take over the library, records, goodwill, etc., of the *Textile Organon,* and will issue a new monthly magazine to be known as the *Rayon Organon.* Mr. Hunt will edit this publication. The new bureau will serve both the rayon producing and fabricating industries and the public. Offices are being opened at 21 East 40th St., New York, N. Y.

•

Paris Puts Acetates In Style Spotlight

Fabrics which are part or all acetate are given emphasis in the new Paris showings. Flat acetate yarn is used by Colcombet in a wide range of distinctive fabrics, notable for their crystal aspect. One of the interesting new plain taffetas is 100% acetate, while quilted lames combining acetate and metal in Persian designs also are featured. Synthetic yarns are highlighted too in shiny velvets, satins, several striking pebbly crepes and a new type of rayon satin which has a full lame face that shines through the reverse. One original fabric, reports the Paris office of DuPont Style Service is a combination of acetate yarn with slit cellulose film making a distinctive silver lame.

•

What's in a Name?

The issue of fiber identification in textiles continues to be widely discussed among rayon merchandisers as a postmortem to the recent address by Louis Rothschild of the Washington Better Business Bureau. Perhaps the most puzzling phase of the discussion is the emphasis placed on the need for more

general use of the term "rayon" in describing fabrics made from synthetic yarn. As a matter of fact, this term is growing more popular in general usage every day. Rayon merchandisers agree that calling rayon satins just "satins" is misleading, but they stress that generally rayon is not seeking to be "anonymous" and that on the contrary huge sums are being spent to educate consumers to the specific advantages and characteristics of rayon merchandise which is identified as such.

•

Hollow Staples Patented in England

Staple fiber in predetermined lengths formed of hollow filaments with sealed ends have been patented by a Lancashire chemist, Fred Ferrand, F.C.S., who has been working to develop this fiber for many years. He has so far operated a small unit at a well-known Lancashire cotton mill near Preston, which has the distinction of being the first Lancashire spinning mill to produce its own raw material.

Mr. Ferrand's method consists of passing viscose or other spinning solution through a jet in continuous flow and having an intercepted flow of air passing through simultaneously. The air forms hollow filaments which, on coagulation, become sealed at each end on account of the interceptions in the air flow. The duration and frequency of the air interceptions determine the length of the staples.

The staples are ingeniously gathered around a bowl or dome within the coagulating bath and are automatically arranged in parallel formation. They are thus in a mass or hank form, which can be readily dealt with in the bleaching, washing, and drying processes. They are fed onto the cotton carding machine by means of a hopper and spun in the normal way. The hollow formation greatly facilitates spinning, it is reported, and the resultant yarn is warm and soft in handle and takes dyes evenly.

In addition to viscose, both cuprammonium and acetate methods have been employed. The price of the fiber is competitive with existing types of staple fiber produced in England. A new company, Ferrand Staple Processes, Ltd., is to be formed with a capital of 10,000 pounds, which is to arrange for the various interested cotton spinners to produce on a royalty basis. The rights for the overseas countries are to be sold outright in each country.

Left to right: toy Siamese cat manufactured by F. W. Woolnough & Co., of plush which Shelton Looms made from viscose process DuPont yarn, seated beside a pure-blooded Siamese cat. The rayon toy is originated by Louis Loeb, formerly sales promotion manager of Fruit-of-the-Loom Mills, Inc., and sells under the copyrighted name "Feen-Feen"; the pendent ring is a good-luck emblem legendary in Siam and its story is told in the booklet shown suspended from "Feen-Feen's" neck. The toy sells as a gift item at $3.50 up retail.

RAYON IN THIS ISSUE

	page
Old Paintings Inspired Current French Styles	71
Crush-Resist Velvets a Boon to Modest Purse	73
Germany's Staple—How Compares to Older Fibers	74
Italy's Staple—Successful Against Cotton, Wool	75
Filling Thread Separator	109
Improved Loom Reed	110

•

'Way Up in the Stratosphere

Rayon shipments for September set a new high record, raising the index to 583, against 550 for August, and cutting surplus to 5½ weeks' supply, states the *Rayon Organon*, this month, in its first issue as successor to the *Textile Organon*.

•

What Price Acetate?

With synthetic yarns still selling spiritedly well into the final quarter, interest in the rayon market centered on the question of whether acetate or viscose prices would advance. The much-talked-of acetate rise had not materialized up to the start of this month.

The nearest approach to that was the generally accepted report in the market, unconfirmed by Celanese Corp. of America, that this firm had restored the differential of 2c. on the 150-denier, 60-filament, bringing that yarn to 62c., against 60c. for the 150-denier, 40-filament.

•

Industry Briefs

Bemberg Shipments at Peak—Yarn deliveries by American Bemberg Corp. during the third week of September were 25% above the previous high level for a like period and thus set an all-time record, it was stated by officials of the firm. On Oct. 1, Bemberg withdrew prices on its 300 denier yarn.

United Kingdom rayon production in August, 1935, totaled 7,540,000 lb., which shows a considerable drop compared with the July figure of 10,910,000 lb. Comparison with August, 1934, however, shows a substantial increase from 5,700,000 lb. The total for the first eight months of the year is 79,750,000 lb. against 59,950,000 lb. in the corresponding period of 1934. Figures include staple fiber and waste.

New Bedford Textile School offers a course of seven evening sessions on rayon on Friday evenings at 7:30 p.m. beginning Oct. 18. Technicians, executives and others will speak on phases of the subject on which they are authorities. The course is open to all who register and pay $1 fee for the necessary supplies for the course.

Rayon Mill News

Allied Yarns Corp., Paterson, N. J., has been organized with capital of $50,000, and 500 shares common stock, no par value, to operate a local mill for manufacture of novelty yarns. Company is represented by Abram Waks, 136 Washington St., Paterson.

Carolina Rayon Mills, Burlington, N. C., is being painted and repaired after having been idle for over two years. Formerly viscose yarn was produced. The plant is owned at present by Hercules Life Insurance Co., of Chicago, which bought the assets of National Life Insurance Co., of which A. M. Johnson was at one time head. It is understood that Mr. Johnson furnished funds for establishment of the plant and at one time it was known as A. M. Johnson Rayon Mills.

Dixie Throwing Co., Greensboro, N. C., is completing a new one story addition to mill, 70x96 ft., and will install machinery at early date to give employment to about 50 additional operatives, making a total of 240 workers at the plant. Expansion will cost over $65,000.

Cascade Rayon Mills, Mooresville, N. C., is installing 164 looms in addition to 246 in operation.

Widder Fabrics Corp., Emaus, Pa., has been organized as an interest of **Widder Brothers, Inc.,** operating a local silk mill, to manufacture rayon specialties. It is understood that a portion of the Emaus plant will be used for the firm's new activity. Eugene Widder is president of new company, and Jacob Widder, secretary and treasurer of the company.

Franklin Rayon Corp., Providence, R. I., is awarding all miscellaneous contracts for completion of new three story and basement mill unit, 100x160 ft., and will have unit ready for service in October. Contract for sprinkler system has been let to the Grinnell Co., Inc., Providence. New unit will cost over $65,000.

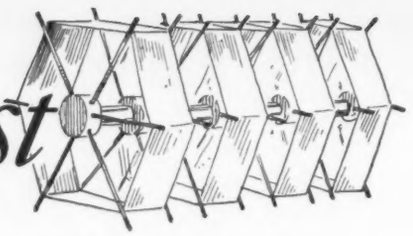
Slater (S. C.) **Mfg. Co.** is offering for sale a considerable quantity of its cotton machinery and it is understood that rayon machinery will be installed in its place.

Abbeville (S. C.) **Cotton Mills** will make only rayon goods in the future, according to J. Foster Barnwell, general manager. Employees are now being trained in the technique of rayon manufacturing.

Gloria Textile Mills, Johnson City, Tenn., a branch of the Burlington Mills of North Carolina, previously referred to as having been organized, have begun operations.

TEXTILE WORLD'S

Silk Digest



WE had a bright idea about two years ago. (Almost time for another one, isn't it?)

It grew out of an attack of dizziness we suffered through the rapid succession of names to succeed the old Silk Association of America. You may recall that first it was the Silk and Rayon Institute, then the Textile Institute, then the Federated Textile Industries, Inc., and finally the National Federation of Textiles.

So, in our December, 1933, issue, we said:

"We have a new name to suggest. How about the Silk Association of America?"

Most people thought we were just being funny—and not too funny at that.

But now, nearly two years later, there's a decided swing in sentiment toward taking the old name out of moth-balls and using it again.

We hope the faction in support of this idea wins out. We're for it. We like a truly descriptive name; we dislike ambiguity. National Federation of Textiles, as a title, is almost the height of ambiguity. The industry it serves, and the job it is doing and has done for so many years, deserve something better than that.

So, again, how about the Silk Association of America?

—*Editor.*

Silk Identification Features Parade

With much fanfare of publicity through store promotion, press releases, radio, movies, lectures, etc., the second annual Silk Parade was staged on a nation-wide scale by the International Silk Guild during the week of Sept. 23 to Sept. 28. The event was observed by 7,500 stores in all the chief cities of the 48 States, as well as by many leading stores in foreign countries. It is estimated that the promotion carried the message of silk to between 13 and 15 million women consumers.

While similar in broad aims to the Silk Parade of last year, the promotion improved upon its predecessor in details. Various features used last year which had not been especially successful were dropped and other ideas were utilized more in keeping with modern merchandising. The window display contest has proved a leading feature of the 1935 Parade; it brought a large number of entries and was credited with greatly stimulating the quality of window displays throughout silk week. The display contest closed Sept. 30. Due to the large number of contestants it was not expected that the results would be known until the latter part of this month.

When the 1935 Parade is compared with that of last year the most notable difference is in the viewpoint of the retailers. This year the stores took to the idea with greater enthusiasm and arranged store-wide events to tie up with it. Silk merchandise of all kinds irrespective of department was highlighted, whereas last year many stores limited their observance to piece goods and ready-to-wear.

Another development this year which greatly helped toward quickening consumer consciousness of silk's values was the increased effort toward fiber identification. The Guild put forth special effort to this end and stores cooperated heartily. The distribution of silk identity labels by the Guild was more widespread than last year and the selling personnel of stores showed themselves to be better informed regarding identity of silk merchandise. Advertising also was more specific and copy was carefully scanned prior to publication for possible misstatements on fiber identity. Leaders of the Guild expressed the belief that the progress made in fiber identification was one of the big accomplishments of the Parade.

Widespread distribution of "Silk Merchandise News" in a series of sections covering all types of silk merchandise, was a highlight of the Silk Parade.

•

Silk Association Revival Idea Gains

Market interest in the idea of reviving the Silk Association of America is growing steadily, if we are to judge by comment heard among certain of the silk manufacturers. While the matter is still in the conversation stage and specific action seems remote, it appears that the industry is experiencing a change of heart. It seems a far cry back to the days when the news of the Silk Association's demise was received with general satisfaction. Some critics now point out that the prestige of the term "silk" has grown rather than lessened in recent years and these spokesmen tend to the belief that the industry made a mistake in completely abandoning its fiber identification. Attention is being drawn to the fact that the Silk Association had built up a fiber consciousness which was a definite asset. It is uneconomic, some manufacturers argue, to allow this asset to be discarded; they also emphasize that the cost of the association through the generations represented a huge financial investment which cannot be fully conserved without conserving the term "silk" in the name.

•

Cutters, Stores Buy Fabrics Actively

The broadsilk industry enjoyed a sustained and healthy demand through the better part of September and most firms entered October in a satisfactory position. Both cutters and retailers bought actively. Stores placed the bulk of their fall orders in late August for September shipment and so the latter part of September found them fairly well stocked; however, retail movement was good which brought a fair reorder call to mills. Demand centered on nubby effects and the more conservative novelties. Satins and metals were in fair call. One feature was the strong interest in the prints which simulated metals. Cutters were active throughout the month, and buying centered on matellasses, oatmeals, friendships, with a somewhat lesser call for metals and flat fabrics. Prices in both markets were steady and appeared likely to remain so.

•

Silk Labels Spur Sales, Says Gerli

Fabric identification is one of the major issues confronting the American department store, it was asserted by Paolino Gerli, president of the International Silk Guild, in a recent statement. Mr. Gerli said stores are gradu-

ally coming to recognize the need for specific statement in selling textile merchandise, especially in selling goods of silk or rayon content; he cited increased use of silk labels. He asserted that the identification movement has been endorsed by leading stores who find this policy helps their business, but that many stores are still backward on the point and that their business suffers accordingly.

•

Silk Rise Begins To Worry Japanese

The raw silk advance had reached such proportions early this month as to cause worry among the Japanese silk interests both in New York and Tokio. The key unit, Crack XX 13-15 white 78% rose from $1.91 on Aug. 30 to $2.07 on Sept. 30 and the start of October pointed to continued gains. Broadsilk manufacturers complain bitterly that they cannot afford to use silk at the new levels because the piece goods market will not absorb the increase; therefore a considerable number of weavers are resorting to synthetics as substitute for silks. With some trade wiseacres forecasting "three-dollar silk" before December, leaders in the silk industry are hoping devoutly that this will not come about as they figure they would lose more than they would gain at that level.

•

Deliveries Up 38%

Advancing prices have stimulated rather than impeded raw silk deliveries, according to figures issued by the Planning and Research Bureau of the National Federation of Textiles, Inc., which show September deliveries to be 9% above August and 38% above September, 1934. Key figures in bales follow:

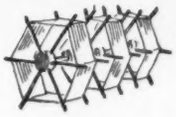
	Imports	Approx. Deliveries	Stocks at warehouses end of month
July, 1935.	34,802	44,166	32,654
Aug., 1935.	46,442	41,715	37,381
Sept., 1935.	46,455	45,156	38,680

•

Velvet Activity Lifts Prices 10c.

The transparent velvet market took a definite turn toward profits during September thanks to healthy demand from both cutters-up and retailers. Price increases were persistently reported, though at first leading firms denied that there had been any change. Manufacturers added that demand was so far in excess of supply, a price rise would be "entirely logical." Finally, the third week of the month most firms announced a rise of 10c. on the prices of all lines; this made black transparent $1.15, colors $1.25, as against $1.05 and $1.15 previously.

Market conditions in transparent velvets have improved steadily since spring. The fashion emphasis, plus the added interest of the crush-resistent velvets has brought the pile fabrics into increased popularity and its activity promises to be maintained.



SILK IN THIS ISSUE

	page
Fabric Trends at Winter Fashion Preview	67
Soaring Silk Prices Reflect Possible Shortage	70
Old Paintings Inspired Current French Styles	71
Avoid Too Much Sheen in Flat Crepes	82
Last Stretch on Road to Dress Fabric Standards	85
Silk Pickers	104
Filling Thread Separator	109
Improved Loom Reed	110

Schell Tells Plans of Velvet Association

Outline of the plans for the recently formed Velvet Manufacturers Association of the United States, of which Henry H. Schell, vice-president of Sidney Blumenthal & Co., is president, has been given to TEXTILE WORLD by Mr. Schell. Mr. Schell emphasizes first that the new organization will not encroach in any way upon the functions of the Velvet Guild. The association's membership includes members of the Guild, he said. The association, which came into being as result of discussions early last summer, will concern itself only with economic problems of the industry especially those bearing on legislative, tariff and market matters. Its membership represents 92% of the velvet looms of the country, Mr. Schell said.

•

Foreign Flashes

Paris Goes Velvet—Many new uses for velvet were developed at the Paris openings, according to an enthusiastic bulletin from June Hamilton Rhodes, of the Velvet Guild. She highlights a velvet cocktail dress as significant because it carries this fabric further into the informal field. Velvets are stressed also in collars, cuffs, scarves, belts, etc.

Soviet's Record Harvest—Dispatches from Moscow state that a record harvest of silkworm cocoons, totalling 18,000 tons has been collected this year in Soviet Russia. At present 800,000 collective farms rear silkworms; these farms are chiefly in Transcaucasia and central Asia.

Brazil to Study Silk Culture—Establishment of a silk culture experimental station at Bahia, Brazil, was authorized by Brazil recently, Vice-Consul Lee Worldy reports to the Department of Commerce. Mr. Worldly states that the Brazilian government expects 200,000 mulberry trees soon to be added to the present total of 150,000.

•

Silk Financial

Cheney Bros., South Manchester, Conn., sold at auction on Sept. 25 a quantity of machinery which had been adjudged as surplus. The offering included 134 winders and 210 looms. The firm is being reorganized under Section 77-B. The sale brought a total of $22,000. The Massachusetts Knitting Co., Jamaica Plains, Mass., was the largest individual buyer. Cheney Bros. has dropped plans to raze several idle mill buildings because of taxes, the Town of Manchester having agreed to reduce the assessment.

Kaplan Mfg. Co., Inc., Bloomfield, N. J., has been organized with capital of 100 shares of stock, no par value, to operate a silk mill in this vicinity. Harold L. Kaplan, 41 Washington Street, Bloomfield, is company representative.

Harlou Silk Mills, Inc., Paterson, N. J., have been incorporated with capital of $100,000, to operate a local broad silk mill. Company is represented by Burton B. Wiener, 5 Colt St., Paterson.

Muriel Weaving Co., Inc., Paterson, N. J., recently chartered with capital of 500 shares of stock, plans operation of a local silk mill. New company is represented by Saul R. Alexander, 5 Colt St., Paterson.

Fulton (N. Y.) Silk Mills Corp. has been granted a $100,000 loan by RFC, which may be used as operating capital.

Klots Throwing Co., Scranton, Pa., has concluded reorganization under the new section of the Federal bankruptcy law, and plans increase in operations at different mills. All preferred claims have been paid and stock of company given to bondholders.

•

Silk Mill News

Roslyn Co., Willimantic, Conn., is installing equipment from New York and will manufacture silk and rayon products.

Blackstone Plush Mills, Clinton, Mass., has started operations at the former plant of the Lancaster Mills. For a time finishing only will be performed on goods woven at the firm's headquarters in Pawtucket, R. I.

Commercial Silk Co., Inc., Paterson, N. J., is beginning operations at new branch plant at Clinton, S. C., formerly the mill of the Stutz-Hadfield Silk Co., recently secured under lease, and will soon employ about 120 persons.

Grabur Silk Mills, Inc., Burlington, N. C., has installed a second unit of Fletcher throwing equipment, bought through W. A. Kennedy Co., Charlotte.

Pinehurst Silk Mills, Inc., Hemp, N. C., is installing 364 additional dobby looms.

Punxsutawney (Pa.) **Throwing Co.** has installed an H-W Conditioner for setting twist on silk.

Reading (Pa.) **Silk Throwing Co.** has installed an H-W Conditioner for setting twist.

South Boston (Va.) **Weaving Corp.** will soon begin superstructure for initial unit for new local mill for manufacture of silk ribbons, for which low bid on general contract has been submitted by Allen J. Saville, Inc., Electric Bldg., Richmond, Va. Structure will be built by South Boston (Va.) Factory Corp.

TEXTILE WORLD'S

Knit Goods Digest

WE can never get too excited over complaints about the encroachment of one product upon the markets of another.

Just now, we are thinking of the advent of the woven fabric swimsuit. Some knitters are hot and bothered over this "intrusion."

If this were something new in the field of trade relationships, we might get more aroused. But the same sort of thing has been going on since the beginnings of commerce.

Sometimes, of course, the shoe is on the other foot. We recall, for example, the "intrusion" of knitters into topcoats, previously the domain of weavers exclusively. And more recently there has been the development of the popular-price knitted dress.

The fact is that you just can't get concessions for the sole production of any product—except possibly in Ethiopia. In this country, the divine right theory died a lingering but fatal death a long time ago.

The net of all this is that it doesn't do any good to weep about a new form of competition. The time can be better spent in trying to meet it—and in watching out for the next one.—*Editor.*

Hosiery Agreement Off to Good Start

While both the Full-Fashioned Hosiery Manufacturers of America and the American Federation of Hosiery Workers are averse to comment at length as to the success of the new hosiery agreement, indications this month pointed toward a feeling of satisfaction on both sides. The agreement became effective Sept. 1, several days after the decision of Lessing J. Rosenwald, in which he compromises on the demands.

Without permitting themselves to be quoted, leaders among employers and workers said that the new contract had gone into effect under happy auspices and the first few weeks of its operation promised well. The only cloud on the horizon is the Federation's strike threat at finishing plants and the trade is divided on the harm or benefit of that.

•

Busy Days Ahead

Various interesting features are included in a program of expansion adopted by the National Knitted Outerwear Association and now gradually being put into effect. Authority to proceed with the program was voted last month by the Executive Committee. The plans include: (1) intensive promotional effort to educate retail sales personnel on handling and care of knitwear; (2) cooperation with Federal Trade Commission in curbing unfair trade practices in the industry; (3) establishing of a tax service to set standard depreciation allowance for tax purposes and (4) further work on development of standard sizes of garments. In line with this program the association also plans a membership drive.

•

Underwear Advancing

The much-talked-of advance in knitted underwear prices began to crystallize toward end of last month. The market situation had been firm for some weeks, the statistical position was good, and wool knitting yarns had advanced in price. Buyers had held off in the early part of summer, but when the price increase appeared to be a certainty, orders took a quick jump and buying was spirited throughout September. One of the first firms to raise prices made its action known Sept. 16; twelve wool content numbers in the union suits were advanced $1 to $3 per dozen over the prices quoted Aug. 15. Shirts and shorts went up from $7 to $7.25 per doz. Cotton underwear lines were very strong at the end of September with signs pointing to an early advance in prices here.

•

Depreciation Study

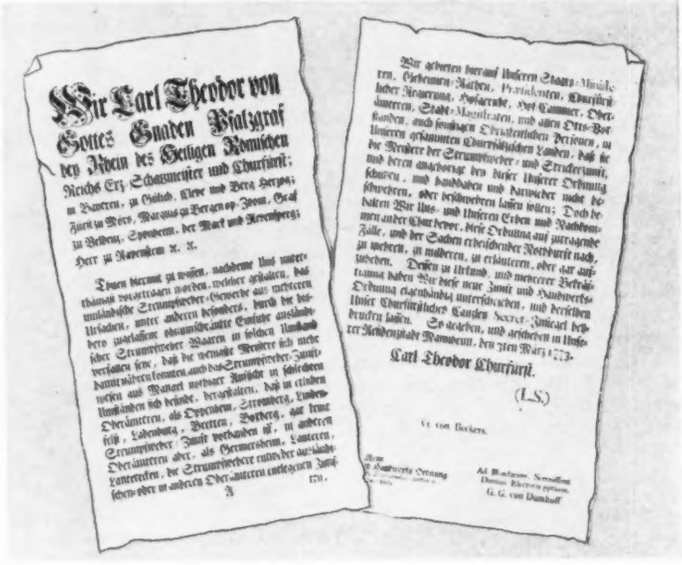
In an effort to clarify the Federal tax problem of hosiery manufacturers, the National Association of Hosiery Manufacturers has been authorized by its Board of Directors to conduct an industry-wide study of depreciation rates which are at present allowed by Federal tax authorities on hosiery equipment.

•

Code of 1773 Had Real Teeth in it!

Hosiery manufacturers who may have found the NRA code irksome—and these were plentiful enough—should thank their lucky stars that they were not manufacturing hosiery in Germany during the Eighteenth Century. The modern New Dealers could learn much as regards business regulation from the rules set forth in a hosiery code which governed the industry in Mannheim in 1773. The code came to light recently; it was translated by Hans Janssen, nephew of Henry Janssen, vice-president of Berkshire Knitting Mills, and the English text was made public by Hugo Hemmerich, superintendent of Berkshire through the National Association of Hosiery Manufacturers.

Among other things the 1773 code ordered prison terms and fines for anyone selling imported stockings, provided for minimum prices on woolen stockings, and ordered that data be collected on styles and qualities of merchandise. Practices that were prohibited included calling customers away from competitor's counter, bribing competitor's customers, or deprecating the quality of his merchandise. Failure to attend meet-


Wir Carl Theodor von Gottes Gnaden Pfalzgraf bey Rhein des Heiligen Römischen Reichs Erz-Schatzmeister und Churfürst; in Bayern, zu Gülich, Cleve und Berg Herzog; Fürst zu Mörs, Marquis zu Bergen op Zoom, Graf zu Veldenz, Sponheim, der Mark und Ravensperg; Herr zu Ravenstein &c. &c.

Carl Theodor Churfürst.

(L.S.)

Here are the first and the last pages of the Mannheim hosiery code of 1773

ings of the local hosiery guild was punishable by fine. The code was promulgated by Carl Theodor, Electoral Prince in Mannheim.

Thus it was in the hosiery industry in 1773!

•

Strahan Succeeds Hemmerich

J. C. J. Strahan, of Strahan & Co., Philadelphia, has been elected president of the Full-Fashioned Hosiery Association, Inc., open shop organization, succeeding Hugo Hemmerich, of Berkshire Knitting Mills, Reading, Pa. Other officers are: John H. Vogt, of Nolde & Horst Co., Reading, vice-president; F. Elwood Struve, Apex Hosiery Co., Philadelphia, treasurer; and Chas. Lehmuth, secretary.

•

Branded Hosiery Joins Upward March

With both unbranded and branded full-fashioned hosiery gradually stabilizing at the higher levels necessitated by the raw silk advance, market outlook at the opening of the current month was somewhat clearer. The upward trend started Sept. 3 when unbranded lines were raised 25 to 50c. per doz. During the weeks immediately following a few small firms making branded hosiery raised their prices to conform to the higher raw material costs, but the chief firms in that division held back. With the announcement Sept. 21 that one of the leading makers of branded hosiery had raised its $6 line to $6.35, the ice was finally broken and announcements of similar advances among others of the branded line companies followed at the end of the month.

•

What Price Outerwear?

Outerwear prices played various roles during September, the tone differing widely in the respective branches. Manufacturers of berets were struggling to resist downward pressure by jobbers; it was said that numerous buyers were getting merchandise virtually at cost prices. Twin sweater sets on the other hand have advanced from $24 per dozen to $25.50, the rise being ascribed to wool yarn advances. Twin sets continue a strong fashion favorite and so far the advance has failed to impede buying.

•

Hosiery "Boom" in South

Demand is so far in excess of productive capacity in the South that the hosiery industry there is now oversold and some mills refuse orders for delivery prior to Jan. 1, stated Taylor R. Durham, secretary of the Southern Hosiery Manufacturers Association, Sept. 20. He characterized the present activity as "something resembling a boom." Mr. Durham also denied reports that important firms in the South are breaking away from code compliance; at least 90% of the industry is still operating along the lines of the NRA, he declared.

KNIT GOODS IN THIS ISSUE

	page
Allocation of Duties in a Hosiery Mill	72
Designs on Either Latch or Spring Needles	86
Stripes in Hosiery Feet	104
Holes in Hosiery	105
Backing-Wheel Layout	105
Hosiery Design Chart	109

Knitting Flashes

Ringless Inventor Home—Charles A. Kaufman, of Julius Kayser & Co., New York, returned from Europe recently on the Berengaria after a tour on which he contacted the European licensees of his ringless hosiery patent.

Sees "Modest" Swimsuits Coming—Europe has gone decidedly modest in its bathing-suit styles and America will soon follow, declared Bert Schnurer, head of the knitted outerwear firm of that name, who returned from abroad recently. Mr. Schnurer reported that the Continent was turning away from the almost nude types of swimsuits and toward more dressy models.

Here's a New Outlet—F. A. Marsilly & Co., exporters, report that recently they received a request from the Sangoku Trading Co. of Tokio, for quantities of sub-standard silk hosiery. The Japanese firm wants to make these seconds into kimonos for the natives!

•

Knitting Financial Notes

Ballston-Stillwater Knitting Co., Inc., Ballston Spa, N. Y., with branch mill at Stillwater, N. Y., has been acquired by new interests headed by Walter J. Mooney, president and treasurer of Frank B. Graves Co., Albany, N. Y.; James M. Beverly and Richard Currie, both Ballston Spa, heretofore treasurer and superintendent, respectively, at the Ballston-Stillwater mills. New company will develop plants to maximum capacity with full working quotas, and will be headed by Mr. Mooney as president; Mr. Currie, vice-president; and Mr. Beverly, secretary and treasurer.

Hampton Knitting Mills, Inc., Brooklyn, N. Y., have been organized with capital of 200 shares of stock, no par value, to operate a local knitting mill. Company is represented by Willard I. Zucker, 521 Fifth Ave., New York, attorney.

Otto Schmid Knitting Mills, Inc., Queens, New York, N. Y., have been organized with capital of 50 shares of stock, no par value, to take over and operate the mill of Otto Schmid at 60-54 Grove Ave., Ridgewood, Queens. Mr. Schmid will head the new company.

McLaughlin Textile Corp., Utica, N. Y., has voted to liquidate its properties and will arrange for early sale of four large mill units, totaling about 331,000 sq.ft. floor space, which gave employment at one time to approximately 3,300 persons to different departments. There are about 300 sewing machines and 300 knitting machines to be disposed of.

Hudson Silk Hosiery Co., Inc., Charlotte, N. C., has concluded negotiations with RFC for a loan of $500,000 for a period of five years.

Grenaco Knitting Mills, Inc., Rockingham, N. C., has been chartered to operate a yarn mill and manufacture various kinds of textile fabrics. Authorized capital stock, $100,000; subscribed stock, $20,000. Incorporators: John L. Everett, S. C. Johnson and J. L. Everett, Jr., all of Rockingham.

Van Raalte Co., Inc., in our last issue, was incorrectly said to have *paid* 39c. per share on common in 1934. The verb should **have read** *earned* in the first half of 1934.

Fairy Silk Mills, Shillington, Pa., have been continued in the hands of E. S. Jenckes, receiver, until Jan. 15, 1936.

Knitting Mill News

Jim Wilson and **J. H. Tomlin** are establishing a new hosiery mill at Villa Rica, Ga., to make women's hose.

Lillian Knitting Mills Co., Albemarle, N. C., is preparing to install additional equipment at a cost of $50,000 which will double capacity of full-fashioned hosiery to 200 dozen pairs daily.

Asheville (N. C.) **Hosiery Co.** has awarded general contract to E. J. Tyler, Miles Blvd., Asheville, for new one story mill addition, 60x65 ft., for which superstructure will begin at once; cost about $23,000. Lindsey M. Gudger, Asheville, is architect.

May Hosiery Mills, Inc., Burlington, N. C., has sold 275 knitting machines to Vance Knitting Mills, Kernersville. The machines are located in the Daisy Hosiery Mills and will be kept in operation at present location and moved to Kernersville early in 1936.

Concord (N. C.) **Knitting Co.** plans to double its output of pure seamless silk hosiery within the next 12 to 18 months. A two story brick-and-steel addition will be built to cost $8,000.

Thornton Knitting Co., Inc., Denton, N. C., has been chartered with authorized capital of $100,000, with $7,500 stock subscribed by S. W. Burton, of Thomasville, and J. E. Wilkins, of Denton. Forty knitting machines have been installed in a portion of the Rogers Hosiery Mill leased by the firm. Product will be men's fancy half hose.

Pauline Hosiery Mills, East Valdese, N. C., has purchased twenty new Banner hosiery machines which will increase capacity 600 dozen pairs hose weekly.

Vance Knitting Co., Kernersville, N. C., has let general contract to C. M. Guest, Anderson, S. C., for new one story addition to mill, designed to double present capacity. Cost about $50,000.

Artcraft Silk Hosiery Mills, Philadelphia, have bought and are now installing $200,000 worth of full-fashioned machinery in a new wing of their plant.

Eastern Knitwear Corp., Philadelphia, Pa., recently organized, has established a local plant in building at 445 North Darien St., where entire floor, about 6,000 sq.ft. of space, has been leased.

Harriman (Tenn.) **Hosiery Mills** have work nearing completion on new one story addition to mill and will install equipment for increase in present capacity.

Paul Knitting Mills, Pulaski, Va., have plans for new one story addition, 40x60 ft., for which superstructure will soon be placed under way. It will be equipped as a finishing division.

TEXTILE WORLD'S

Processing Digest

A HUNDRED years ago the textile industry drew to it many of the foremost chemists of the world. It looked upon these men as its leaders, recognized that improvements in processing were due mainly to their efforts. As methods became standardized, chemistry dwindled in importance, the chemist played a less prominent rôle, other fields became more inviting to young men with chemical training. For a time the textile chemist, with few exceptions, was little more than a dye tester, his laboratory some hole in the wall.

The cycle is nearly complete. Again the textile chemist is coming into his own. The rapid developments of the last few years make his services indispensable. The wise executive has realized that fact and is giving his plant laboratory ample opportunity and support. He is sure to get his money back.—*Editor.*

Cause of Two-Tone Dyeings in Silk Hosiery

Two-tone dyeings in silk hosiery are due to differences in the shape and size of the silk filaments in adjoining sections of the fabric, according to an investigation made by Fred A. Mennerick and O. A. Hougen of United States Testing Co. In a report of their work, which appears in the September issue of *Textile Research,* the investigators state that the larger and flatter filaments dye darker than the rounder and smaller filaments; a difference of 0.03 in diameter ratio or a difference of 0.7 micron in mean diameter is sufficient to produce two-tone dyeing; silks from different breeds, and possibly from various seasons and districts, are characterized by a difference in shape and size of the filaments. The report continues that no consistent relation was found between two-tone dyeing and other properties—such as color of raw silk, feel, hardness and exfoliation—and that no relationship was found among such properties. Conclusions reached by the investigators are that by grading raw silk according to the shape and size of filaments, one can minimize two-tone if ten-bale lots are so selected as to show a variation of less than 0.03 in diameter ratio and 0.7 micron in mean diameter; and by routing ten-bale lots in throwing so that consecutive lots do not exceed this variation, one can use about two-thirds of all lots with nearly complete elimination of inherent two-tone dyeing.

•

British Finishers Seek Way Eliminate Excess Capacity

Similar in its broad lines to the plan of the British cotton industry for elimination of redundant mills and equipment in Lancashire, is a new plan which has just been developed for the British dyeing industry. An outline of the project given in a recent issue of the Manchester *Guardian Commercial,* states that it embodies several phases which mark a step beyond the cotton industry plan. Anticipating labor opposition to the prospect of displacing workers, the program includes a fund to deal with cases of hardship among these displaced operatives. The project also includes a pool and quota plan for adjusting current demand to current capacity and machinery activity. In addition, the scheme embodies a provision for the purchase of quotas both from firms which go out of the industry and from firms which do not undertake as much business as they have capacity for. It was decided furthermore to include bleaching and printing in the program. However, the whole project is still in its early stages and its changes of success are conjectural.

•

Vat Dyes and Everfast Fabrics

Outlining the history of Everfast fabrics, Ansco G. Brunier, Jr., in an article in current issue of the *Du Pont* magazine, emphasizes the important part played by vat dyes in making a success of a merchandising idea. It is interesting to note that when, about fifteen years ago, N. Erlanger, Blumgart & Co., Inc., first decided to put out a line of unconditionally guaranteed plain-dyed fabrics and enlisted the services of Joseph Bancroft & Sons to that end, it was possible to offer only seven shades which would withstand the severe tests to which the goods were subjected before they were offered for sale. Today both vat-dyed and vat-printed fabrics are available in a wide range of shades which are fast to light and washing. Commenting on the growing demand for quality fabrics Mr. Brunier states: "Sound business is not built up on sales alone. Confidence and prestige rank high in any successful enterprise. Consumers soon distinguish between good and bad merchandise, but once they learn to use quality products, they seldom accept others that are not known to be altogether trustworthy."

•

Bemberg Develops Crepe-Soaking Formula

American Bemberg Corp. has announced the development of a special soaking formula for cuprammonium in yarns used for crepe-filling purposes. The formula was evolved after 1,500 methods had been applied to Bemberg yarn without satisfactory results. It is stated that the treatment completely eliminates the irregularities and inconsistencies formerly experienced. Details of the formula have not been published, but Bemberg officials state that it is available to textile mills on request.

•

A.A.T.C.C. Notes

Carl V. Draves, chairman of the committee of the technical program of the annual meeting of the American Association of Textile Chemists and Colorists, asks that authors of papers submit titles to him as soon as possible. In order to encourage more intelligent discussion, abstracts of all papers will be published in advance of the meeting. These abstracts must be in the hands of the program committee before Nov. 1. Final complete copies of papers ready for publication must be submitted at the time of presentation of the paper.

Sidney Edelstein has been appointed as a research associate of the association to work under the supervision of the sub-committee on mercerizing, of which Prof. Charles B. Ordway is chairman. Mr. Edelstein will carry out his experimental work at the University of Chattanooga. He graduated from Massachusetts Institute of Technology in 1932 and since then has been engaged in research and plant work at the Dixie Mercerizing Co., in Chattanooga.

Problems in processing heavyweight silk and rayon fabrics were discussed Oct. 4 by Dwight L. Johnson, textile research department of Procter & Gamble, at the first fall meeting of the New York Section, held in Paterson, N. J. Following the address, Ephraim Freedman, chairman, showed color motion pictures of the section's outing last spring.

•

Pickets Picketed

It was a case of the pickets being picketed last month in Paterson, N. J., when Miss Patricia Cramer, discharged employee of the Local 1733, Federation of Dyers, Printers, Finishers & Bleachers of America, paraded outside the union's office in Paterson carrying a sign which charged that the union was "unfair to organized labor." She asserted that her discharge, ostensibly for economy, really was because she had tried to organize the union's clerical staff in a branch of the Office Workers' Union, a radical organization.

New Dyes

Geigy Co., Inc., announces the following new products:

Novazol Acid Blue SL, a fast-to-light, level-dyeing acid color, recommended for use in producing self shades, in combination with Erio Flavine 4G or Erio Fast Floxine BL, and for shading chrome colors.

General Dyestuff Corp. announces the following new products:

Fastusol Brown LGA, a direct color of very good fastness to light and particularly good leveling properties for application on cotton, rayon, and cotton-silk and cotton-rayon unions.

Algosol Yellow V, a homogeneous dye producing bright yellow shades, and of special interest for the production of green shades with Algosol Green IBW; Chromoxane Brilliant Violet SBN, a chrome color recommended for producing bright violet self-shades and for brightening navy blue shades; and Diazo Brown 6 GA, a developed color producing easily dischargeable yellowish brown shades of good fastness to washing.

•

Retailers to Fight Converters' F.O.B. Terms

The National Retail Dry Goods Association has filed legal charges to prevent the Wash Goods Division of the Cotton Converters Industry from operating under the much-debated F.O.B. terms. An announcement anticipating this was issued recently by the retailers' organization. The retailers advised the Textile Fabrics Association of their attitude in a letter which stated that while the NRDGA "recognized the right of any manufacturer to sell merchandise at any price and terms he may deem desirable it did not recognize the right of the members of a trade association to combine in an agreement which would inflict such terms as your F.O.B. provision on your customers."

•

Industry Briefs

Dyers' Union Sued—Charging breach of contract because of the strike last year, the Supreme Piece Dye Works, Paterson, N. J., has brought suit for $200,000 damages against the Federation of Dyers, Printers, Finishers & Bleachers, and that body's Paterson local, No. 1733. The complainant charges that the strike forced the company into bankruptcy and necessitated the filing of a petition to reorganize under Section 77-B last July.

Trubenizing Gains in Britain—Ladislaus Zukmann, European representative for Trubenizing Process Corp., announced in London that eight British firms have been licensed to use the Trubenizing process. The firms are: Welch Margetson & Co., Ltd.; H. T. Greenlaw & Co., Ltd.; Lloyd, Attree & Smith; Vernon Booth & Co., Ltd., M. A. Boggis, Ltd.; Bonjour Shirts, Ltd.; R. H. & S. Rogers, Ltd.; and M. Bertish & Co., Ltd.

New Throwster Tints—A new line of 64 certified throwster tints, comprising 40 for silk and 24 for rayon yarns, is announced by the United States Testing Co., Hoboken, N. J.

United Case Dismissed—Application made by a stockholder for the appointment of a receiver for the United Piece Dye Works, Lodi, N. J., was dismissed Sept. 18 when the case was heard before the vice-chancellor in Paterson, N. J.

•

Processing Financial

Arnold Print Works, North Adams, Mass., is making progress in its reorganization plans under Section 77-B. A group of dyestuff creditors have asked for the present management to be continued in charge and have expressd confidence in the future of the business. The court continued the management in control at first hearing on Sept. 23. It is required that a plan be filed within three months.

Warren Piece Dye Works, North Bergen, N. J.—Former mill machinery and equipment have been acquired by the Consolidated Products Co., Inc., 15 Park Row, New York, N. Y., and will be liquidated at once from plant site.

Opal Dye Works, Inc., Paterson, N. J., recently organized with capital of 1,000 shares of stock, no par value, plans operation of new local print and dye works. Emanuel Shavick, 140 Market St., Paterson, is company representative.

Vogue Dyeing Co., Paterson, N. J., which last July filed petition for reorganization under Section 77-B, will instead be liquidated according to an order signed by a Federal judge on Sept. 30.

D. C. McAllister Co., Belleville, N. J., has filed a voluntary petition in local Federal Court for permission to reorganize under the new Bankruptcy Act. Assets are stated at $76,117 and liabilities, $55,982.

Atlas Dye Works, Inc., North Bergen, N. J., is in the hands of William S. Weeks, receiver.

Advance Piece Dye Works, Inc., 359 Broadway, New York, N. Y., have filed notice of increase in capital from $12,000 to $100,000, for general expansion.

Mayfair Piece Dye Works, Inc., New York, N. Y., have been organized with capital of 120 shares of stock, no par value, to operate a local dye and finishing works. New company is represented by F. E. M. Ballon, 1450 Broadway, New York.

Raytex Dyeing Corp., Bronx, New York, N. Y., has been organized with capital of $10,000, to operate a local bleach and dye works. Incorporators include Moe Bloom, 1350 Grand Concourse, and Sidney Bernstein, 1181 Sherman Ave., both Bronx.

Apponaug (R. I.) Co. reports net loss of $57,312 for the fiscal year ended June 30, 1935, compared with a net profit of $160,154 in the preceding year. Shrinkage in volume and increased costs not compensated by increased prices were described by E. C. Greene, president, as responsible for the loss.

Flory Dye Works, Inc., Paterson, N. J., has recently been organized with capital of 1,000 shares of stock, no par value, to operate a local dye and finishing mill. Company is represented by Emanuel Shavick, 140 Market St., Patterson, attorney.

PROCESSING IN THIS ISSUE

	page
Crush-Resist Velvets Boon to Modest Purse	73
Let Finisher Know When You Use Mineral Oil	78
Rules of Color Harmony Improve Textile Designs	80
Avoid Too Much Sheen in Flat Crepes	82
Dress Fabric Tests for New Standards	85
Desizing Agents—Four Types of Enzymes	89
Stripes in Hosiery Feet	104
Rolling and Sewing Machine	108
Developments in Dyeing Machinery	108
Cooling and Conditioning Machine	109
Corrosion Control	110

Processing Plant News

Pond Lily Co., New Haven, Conn., is carrying out expansion at mill, including the installation of four new printing machines and auxiliary equipment.

Jeandros Dye & Print Works, Inc., New Bedford, Mass., lately formed with capital of $100,000, has taken over one of the local mill buildings formerly occupied by the National Spinning Co., and will use for new plant. Equipment will be provided for employment of about 200 persons in different departments. Operations will begin soon. Jules Jeandros is president of new company, and Sidney Alexander, treasurer. This will be a "pure-dye" silk printing and dyeing plant.

Century Textile Printing Co., Inc., Paterson, N. J., will operate four printing machines in plant at 25th St. and Third Ave. Company has been organized with Irving Rosen, president, and Adolph Tannebaum, vice-president.

Swiss Bleaching Co., Union City, N. J., and **Durham Dyeing Co.,** North Bergen, N. J., affiliated organizations, have arranged for joint lease of former mill of Hasco Dyeing Co., West Nineteenth St., Weehawken, N. J., idle for about four years. Structure is being remodeled and improved.

Amity Dyeing & Finishing Co., Inc., 22 Emerson Pl., Brooklyn, N. Y., has been organized to dye, bleach and finish rayon piece goods. Philip Lubin is president and Adolph Wolf, secretary-treasurer.

North Carolina Finishing Co., Yadkin, N. C., has completed erection of new one story addition to mill, and will occupy at once, increasing former capacity.

Decorative Fabrics Co., Pawtucket, R. I., has been incorporated to do flock printing on all types of fabrics. Space has been leased in the old Fisk Rubber Co. plant. Officers are Donald S. Ashbrook, of New York, president and treasurer; Norman C. Thackery, of New Rochelle, N. Y., vice-president; John Furgeson, of Westerly, R. I., secretary.

United States Finishing Co., Providence, R. I., is altering a mill unit on Charles Street at a cost of $10,000. Brien Building Co., Inc., Woonsocket, has the general contract.

Greenville Finishing Co., Smithfield, R. I., has filed plans for a mill addition to cost about $30,000. C. R. Makepeace & Co., Providence, R. I., drew plans.

TEXTILE WORLD'S

Engineering Digest

THERE are times when the master mechanic in the average mill has a hang-dog and discouraged look, and you really can't blame him. It is not at all an unusual situation to find the master mechanic under constant pressure from departmental overseers to keep machinery and plant in repair, and at the same time be admonished by the management to "do as little repair work as you can since business is slack." Caught between two fires, and conscious of the fact that management will hold him responsible if a major break-down occurs because of cutting corners in repair work, it is small wonder that the master mechanic thinks of himself at times as the "forgotten man" in a textile plant.

The problem is worth executive attention and efficiently operated plants have demonstrated that it can be solved. It is not sound to expect the personnel of the mechanical department to fluctuate in number in proportion to the number of workers engaged in actual production. A certain percentage of busy and slack periods can be expected over the course of six months or a year in most plants, and on this basis it is not very difficult to set up a "budget" for mechanical department personnel. When the plant is busy, the crew has enough to do in making immediate and necessary repairs and changes. When times are slack, there is opportunity to clean up on all those things that "should be done as soon as there is time." Such planning costs less rather than more in the long run and it gives the master mechanic an opportunity to do more intelligent planning on his own behalf.

—*Editor.*

Program to Abate Water Pollution

Six definite recommendations leading to a program for the abatement of water pollution on a nation-wide scale were made on Sept. 30 by Chairman Harold L. Ickes when he released a report to the National Resources Committee by a Special Advisory Committee on Pollution appointed at the beginning of the year to make a survey of conditions in the United States and to draw up a program designed to bring domestic and industrial waste pollution under control.

The Committee's recommendation were based on conclusions reached after a factual survey of pollution conditions and legislation existing for the control of pollution throughout the 48 States. The report indicates that many States are faced with increasingly serious pollution of their waters, that there is little use of uniform standards of water quality, that insufficient effort is being made to protect public health and water fowl and fish life from the effects of domestic and industrial waste, and that many States are lacking in legislation properly drawn to cope with existing conditions.

The six-point program presented for consideration by the National Resources Committee, aims at inter-State control on the basis of drainage areas where possible, the simplification and coordination of State laws, broader authorization and adequate funds for research, the institution of a cooperative program of investigation to be carried on by legally constituted State agencies acting together with an appropriate Federal agency, and the holding in abeyance of changes in Federal law until experiment with a demonstration unit has indicated whether or not changes are desirable and feasible.

The demonstration unit recommended by the Committee would be a Potomac River Conservancy District to be established to serve as a research unit in a special program of cooperation between the States of West Virginia, Virginia, Maryland, and Pennsylvania and the Federal Government.

•

Are You Superstitious?

Even though you believe that it is bad luck and avoid walking under ladders (something may drop on your head), you still face the fact that an estimated 700 users of ladders are killed and 140,000 others injured each year. Back in 1923, the American Society of Safety Engineers (now the ASSE—Engineering Section of the National Safety Council) made up a tentative standard for the making and use of ladders. Most of the accidents result from the poor use of ladders, but there is also a large number that can be attributed to "homemade" construction and to deterioration. Forgetting all the involved associational activities mentioned, the fact is that the American Standards Association has recently issued a code based on the findings of the original committee. It covers types of lumber, construction, and use. Most of the so-called superstitious types of ladder accidents can be avoided by following the code.

•

Third Annual Industrial Materials Exhibit

Many new materials and new industrial manufacturing processes will be dramatically displayed at the Third Annual Industrial Materials Exhibit to be held in the Hotel Astor, New York, on Oct. 21-25. This exhibit is independently sponsored by a group of more than 40 manufacturers in a variety of industries.

•

New Oils Bring A New Technique

In response to a demand for some organized method of supplying information on industrial lubrication problems, the Industrial Lubrication Council, Inc., 51 East 42nd St., New York, a non-profit organization independent of any commercial connections, has been established. To get down to facts, the average plant assigns some one to the lubrication job without arranging for the education of this man. The council, which has as an imposing background six years of activity of the Lubrication Engineering Committee of the Machine-Shop Practice Division of the American Society of Mechanical Engineers, proposes to educate this man.

The council offers for sale sets of the Correspondence Course at a set fee, less discounts for numbers, and a "Lubrication Engineers' Handbook."

•

Some Brief Notes

An electrically controlled, steam, water heater, while it has not as yet reached the new-product stage, is said to be pretty much out-of-the-woods experimentally by the General Electric Co. No steam-regulating valve is used. The heat from the steam is released to the water by means of an hermetically sealed heat-transfer medium which utilizes water vapor as the heat-carrying medium. The water vapor can be put into or removed from operation by automatic electric means, and thus the *release of heat* from the steam is regulated rather than the flow of steam itself.

Gaging corrosion of various metals under special condition is not easy even in the laboratory. In brief, International Nickel Co., through *Inco*, suggests making a spool, 12x4 in., with various metal disks spaced apart. The spool can be placed in the operating machine and examination from time to time will reveal the behavior of the different metals.

The world's largest polished stainless

steel sheet has lately been made by the American Rolling Mill Co. It was displayed at the National Metal Congress in Chicago Sept. 30 to Oct. 5. The sheet is 84 by 90 inches, of 12-gage and carries a No. 7 polish which gives it a shimmering, mirror-like surface.

•

Engineering Trade News

Simco Corp., P.O. Box 5187, Logan, Philadelphia, Pa., is a new company formed for the manufacture, sale, and service of the Midget Static Eliminator and other systems of static elimination.

Ajax Flexible Coupling Co., Westfield, N. Y., has moved its Philadelphia office to 1108 Otis Bldg., where V. L. Anderson will be in charge.

Combustion Engineering Co., Inc., New York, has appointed Don S. Walker as district manager in the Philadelphia office. Mr. Walker will be responsible for sales in both the Philadelphia and Washington territories.

Kennedy Valve Mfg. Co. announces the appointment of William Godbey as its representative in Kansas, Nebraska, western Missouri, and southwest Iowa. Mr. Godbey will make his headquarters in Kansas City, Miss.

Babcock & Wilcox Tube Co., Beaver Falls, Pa., has announced the appointment of R. P. Kilsby to the managership of all sales territory west of the Mississippi. He will make his headquarters at the company's office, Marquette Bldg.

Rawlplug Co., Inc., New York, has opened a new office at 1907 Canton St., Dallas, Tex., where a stock of the company's complete line of Rawlplugs, Rawl-Anchors, Rawl-Drives, Rawldrills, Crowners, and Lok-Crowners will be carried. D. P. Fletcher is in charge.

Phenolite Corp., 309 St. John's Court, Chicago, has acquired exclusive rights to use processes for impregnating wood with resins that were owned by **Pyratone Products Corp.,** Chicago.

General Refractories Co., Philadelphia, announces the appointment of **Chas. A. Strelinger Co.,** Detroit, as dealer-agents in that area. A complete stock of refractories will be carried.

The Nason-Neilan Regulator Co., Boston, has placed in service a new, specially designed truck which will tour the country and give a demonstration of modern reducing valves and control instruments. Executives may see the latest developments of the company in temperature, pressure, and flow control. Control-valve compensators that prevent over-control, over heat protectors, drift compensators, and frictionless, duo-coil action are also shown.

Republic Steel Corp., Youngstown, Ohio, has appointed John W. Carpenter, formerly with the **Otis Steel Co.,** as assistant manager of sales in the sheet and strip division. The company has also appointed J. P. Distler as manager of sales in the wire division, with headquarters at the Grand Crossing plant in Chicago.

Carbondale Machine Corp., Harrison, N.J., recently organized as a subsidiary of Worthington Pump & Machinery Corp. to handle all classes of refrigerating, ice-manufacturing, and air-conditioning equipment, has announced the following officers: president, H. C. Ramsey; vice-president, H. A. Feldbush; vice-president in charge of sales, A. H. Baer; secretary and treasurer, A. L. Prentice.

Ebco Mfg. Co., Columbus, Ohio, has purchased all the assets of **D. A. Ebinger Sanitary Mfg. Co.** and will carry on the business with the same personnel except for the receiver who has been liquidating the old company. The new company will continue manufacture of sinks, toilet partitions, drinking fountains, electric water coolers, etc., and will add new products. A. R. Benua is president; E. E. Fox, production manager; and L. C. Love, sales manager. Wheeler, Fregean & Associates, Columbus, will handle the advertising.

Cyclone Fence Co., Waukegan, Ill., announces that all chain-link fence fabric sold by that company will bear the symbol "Cyclone 12m." Fencing carrying this symbol is guaranteed to withstand a minimum of twelve 1-min. immersions by the Preece test. This test is to determine the uniformity of coating of zinc-coated articles, and is used as a measure of the resistance of the fence fabric to rust, corrosion, and time.

Link-Belt Co., Philadelphia, announces that T. Frank Webster, of the Link-Belt Philadelphia office, has been appointed resident manager of the company's Boston office, succeeding Horace Goldstein, who has been assigned to engineering sales work at the Philadelphia office. Mr. Goldstein was formerly attached to the New York office. Mr. Webster formerly was resident manager at Pittsburgh.

ENGINEERING IN THIS ISSUE

	page
Power Plant Performance; Control Measures	90
Coal, Steam and Drives Discussed at Gastonia	92
Control Instruments	108
Variable-Speed Line Increased	108
Continuously Vulcanized Transmission Belting	108
Limit Switch	108
Steam Trap	109
Changes in Flexible Coupling	109
Improved Sheave	109
Automatic Reel for Steel Strapping	110
Across-the-Line Starter	110
Pumps and Power Equipment	110

Republic Steel Corp. was awarded first prize by judges at the 13th Annual Conference of the National Industrial Advertisers Association held at Pittsburgh on Sept. 18, 19, and 20 for the most outstanding advertising campaign of the year in the field of metals. S. A. Knisely, advertising and sales promotion manager of Republic, states that the prize-winning campaign was created and placed by G. M. Basford Co., industrial advertising agency, with offices in New York and Pittsburgh.

Boston Woven Hose & Rubber Co., Cambridge, Mass., has appointed Wm. A. Briggs to take charge of its southern sales district with headquarters at Atlanta, Ga. He has been with the company for more than 30 years in both manufacturing and sales capacities.

Foster Wheeler Corp. has appointed John F. Glenn to its New York office sales division. He has been associated with Foster Wheeler sales activities for the last two years and for 28 years previously been connected with boiler builders or users.

Republic Steel Corp., Youngstown, Ohio, has appointed Frank F. Chiles as assistant manager of sales of its Bar Division. He was formerly manager of sales of the bar division of Corrigan, McKinney Steel Co. Mr. Chiles will assist W. F. Vosmer in supervising the sales of all carbon semi-finished steel bars, shapes and plates produced by Republic.

•

Engineering Mill News

Martel Mills Corp., Lexington, S. C., recently suffered considerable damage by flood waters which rose four feet in the dye house, carried out a quantity of yarn, damaged beams and washed away a number of houses in the village.

Cliffside, N. C., Mills, have installed a ventilating system in the opening rooms, and also in the homes of the departmental superintendents.

Oxford (N. C.) **Cotton Mills** has installed electric water coolers throughout the plant.

Weldon (N. C.) **Cotton Mfg. Co.** closed for several months has resumed operations, following extensive repairs and renovations.

ADVERTISING PAGES REMOVED

QUOTATIONS

At close of business, Oct. 1, 1935

Prices cover average qualities unless otherwise stated

Cotton Goods

	Oct. 1	Sept. 3	1934 Oct. 1
PRINT CLOTHS			
27 -in., 64x60, 7.60	5	5⅛	5
38½-in., 64x60, 5.35	6½	6½	7¼
39 -in., 68x72, 4.75	7½	7½	8
39 -in., 72x76, 4.25	8⅛	8⅛	8¾
39 -in., 80x80, 4.00	8¼	8¼	9
BROWN SHEETINGS			
36-in., 56x60, 4.00	7¼	7¼	8¼
36-in., 48x48, 5.00	5⅝	6	6¾
37-in., 48x48, 4.00	6¼	7	8⅛
MISCELLANEOUS			
Drills, 37-in., 3 yd.	9¼	9	10⅛
Denims, 2.20	15	15	15½
Tickings, 8 oz.	19	19	19

*Tax included.

Cotton Waste

Peeler comber	12.25
Peeler strip	12.50
White spooler (single)	7.00
Linters (Mill Run Average)	5.50

Cotton Prices

Spot Cotton at:	Oct. 1	Sept. 3	For Month High	For Month Low	1934 Oct. 1
New York	11.05	10.65	11.10	10.65	12.50
New Orleans	10.85	10.55	10.88	10.55	12.60
Liverpool	6.27	6.06	6.53	6.04	6.91

FLUCTUATIONS OF FUTURES

	Closed Oct. 1	For Month High	For Month Low	Closed Sept. 3	Net Change
Oct.	10.70	10.71	10.27	10.29	+0.41
Nov.	10.68	10.83	10.29	10.29	+0.39
Dec.	10.67	10.77	10.30	10.30	+0.37
Jan.	10.71	10.79	10.31	10.31	+0.40
Feb.	10.74	10.74	10.35	10.35	+0.39
Mar.	10.78	10.85	10.38	10.39	+0.39
April	10.81	10.80	10.40	10.40	+0.31
May	10.86	10.93	10.41	10.41	+0.45
June	10.84	10.86	10.46	10.41	+0.43
July	10.82	10.96	10.42	10.42	+0.40

AVERAGE PRICE OCT.-NOV. SHIPMENT
HARD WESTERN COTTON

	F.o.b. New England Middling	St. Middling
1⅛-in.	13.17	13.67
1 3/16-in.	13.67	14.17
1¼-in.	16.67 (Nominal)	17.17

Based on Dec. 10.67.

FOREIGN COTTONS

Alexandria Exchange, Oct. 1	
November, Sak	13.67
October Uppers	11.41
Nov.-Dec. Shipment c.i.f. Boston (Tariff not included)	
Medium Sak	23.87
Medium Uppers	22.87
(By Anderson, Clayton & Co.)	
India Rough, Calcutta Camilla	10.00
China Tientsin No. 1	12.75

Quotations on cotton cloth and cotton yarn as given on this page include the cotton processing tax. Cotton waste prices also include the processing tax but of course the prices on various raw cottons do not include it.

Cotton Yarn

(Tax Added)

CARDED (Average Quality)
Double Carded 2c—4c., higher according to quality

SINGLE SKEINS ON TUBES (Warp Twist)

4s to 8s	$0.26½	20s	$0.29½
10s	.27	24s	.31½
12s	.27½	26s	.32½
16s	.28½	30s	.34½

TWO PLY SKEINS AND TUBES

8s 2	$0.27	20s 2	$0.30
10s 2	.27½	24s 2	.32
14s 2	.28½	30s 2	.35
16s-2	.29	40s-2	.41

SINGLE WARPS

10s	$0.27½	20s	$0.30
14s	.28½	24s	.32
16s	.29	30s	.35

TWO-PLY WARPS

8s-2	$0.27½	20s-2	$0.30½
10s-2	.28	24s-2	.32½
14s-2	.29	30s-2	.35½
16s-2	.29½	40s-2 ordin.	.41½

HOSIERY CONES (Frame Spun)

8s	$0.28	18s	$0.31
10s	.28½	20s	.32
12s	.29	22s	.33
14s	.29½	24s	.34
16s	.30	26s	.35

COMBED PEELER (Average Quality)
TWO PLY—(Knitting Twist) Cones

20s-2	$0.35½	50s-2	$0.50
30s-2	.40	60s-2	.56
40s-2	.45	80s-2	.76

WARPS, SKEINS AND CONES
TWO-PLY—(Warp Twist)

20s-2	$0.36	50s-2	$0.51
30s-2	.40½	60s-2	.57
36s-2	.42	70s-2	.67
40s-2	.46½	80s-2	.78

SINGLES

14s	$0.33½	38s	$0.44
20s	.35½	40s	.45
28s	.39½	50s	.50
30s	.40	60s	.56

MERCERIZED CONES—(Combed, Ungassed)

30s-2	$0.52	60s-2	$0.70
40s-2	.57	80s-2	.96

Raw Silk

	13/15 White	20/22 White	20/22 Yellow
Special Grand, 85%	$2.07–2.12	$1.95–2.00	$1.90–1.95
Grand XX, 83%	2.02–2.07	1.89–1.94	1.85–1.90
Special Crack 81%	1.98–2.03	1.88–1.93	1.84–1.89
Crack XX, 78%	1.94–1.99	1.87–1.92	1.83–1.88
Extra, Extra, 73%	1.92–1.97	1.85–1.90	1.81–1.86
Best Extra, 68%	1.90–1.92	1.70–1.75	1.79–1.84

RAW SILK EXCHANGE

	Oct. 1	Sept. 3	For Month High	For Month Low	Net Change
Oct.	1.86	1.70½	1.19	1.10½	+0.15½
Nov.	1.81	1.68½	1.30½	1.15	+0.12½
Dec.	1.79½	1.67½	1.43	1.26	+0.12
Jan.	1.79½	1.66½	1.44½	1.34½	+0.13
Feb	1.80	1.67½	1.43	1.32	+0.12½
March	1.80½	1.67	1.34	1.24½	+0.13½
April	1.80	....	1.38½	1.26	.....
May	1.80½	....	....	....	.....

Silk Yarns

Hosiery tram 5 thd. Japan, 85%	$2.67½
Hosiery tram, 5 thd. crack XX, 78%	2.50
60/2 spun silk	2.95

RAYON WASTE

Thread (for garnetting)	$0.15–$0.16½

Wool

OHIO, PENNSYLVANIA, ETC. (GREASE)

Fine delne	$0.32–$0.32½	⅜ blood	$0.34–$0.35
Fine clthg	.25– .26	¼ blood	.33– .34
½ blood	.31– .32		

TEXAS AND CALIFORNIA (CLEAN)

Texas, 12 months	$0.74–$0.76
California, Northern	.68– .70

MONTANA, IDAHO, WYOMING (CLEAN)

Staple fine	$0.78–$0.82
Staple ½ bld	.75– .78
Fine and fine medium (original bag)	.67– .69
⅜ blood	.66– .68
¼ blood	.61– .63

EASTERN SCOURED PULLINGS

A.A	$0.78–$0.80	B-Super	$0.69–$0.75
A-Super	.75– .77	C-Super	.65– .67

CARPET WOOL (IN BOND)

Aleppo washed (80%)	$0.19 –$0.19½
China (80-20 selection)	.14 – .14½
Cordoba	.11½– .12
Jorias choice (dirt)	.48 – .50
Scotch black face	.14 – .14½

Tops and Noils

TOPS—BOSTON

Fine (64-66s)	$0.98 –$1.00
Half-blood (60-62s)	.92 – .95
Aver. ⅜ blood (56s)	.85 – .87
¼ blood (50s)	.77 – .80

NEW YORK TOP FUTURES

	Closed Oct. 1	For Month High	For Month Low	Closed Sept. 3
Oct.	90.4	90.5	86.8	86.0
Nov.	90.7	89.0	87.0	86.0
Dec.	91.0	91.5	86.1	86.8
Jan.	90.5	91.3	86.4	86.5
Feb.	90.7	91.0	89.6	86.5
Mar.	91.0	92.1	87.0	....

TOPS—BRADFORD ENG. Oct. 1

Fine (64s) 30½d	⅜ bld. (56s) 20d
½ bld. (60s) 28½d	¼ bld. (50s) 15d

NOILS—BOSTON

Fine	$0.60–$0.62	⅜ bld	$0.50–$0.55
Half bld	.55– .58	¼ bld	.45– .50

Worsted Yarns

ENGLISH SYSTEM WEAVING

2-20s 44s	$1.02½–$1.07½
2-30s 46s	1.07½– 1.12½
2-30 mixes	1.42½– 1.47½
2-36s 58s	$1.37½–$1.42½
2-40s 60s	1.42½– 1.47½
2-50s 64s	1.55 – 1.57½

ENGLISH SYSTEM KNITTING

2-20s 44s	$0.92½–$0.97½
2-20s 50s	0.97½– 1.02½
2-20s 60s	$1.17½–$1.22½
2-20s 64s	1.27½– 1.32½

FRENCH SYSTEM

1-26s 64s	$1.17½–$1.22½
1-30s 64s warp	1.35 – 1.37½
2-40s 64s Zephyrs	$1.50 –$1.52½
2-50s 66s	1.67½– 1.72½

Domestic Rayon (Skeins)

VISCOSE PROCESS

Denier	Filament	Price	Denier	Filament	Price
50	14	$1.07	150	24–40	$0.57
75	30	.87	150	60	.59
100	40	.76	300	44	.48
125	36	.65			

ACETATE PROCESS

Denier	Price	Denier	Price
45	$1.10	100	$0.77½
55–65	1.05	120–125	.68– .73
75	.90	150	.60

CUPRAMMONIUM PROCESS (TWISTED)

Denier	Filament	Price	Denier	Filament	Price
30	24	$1.42	100	75	$0.81
75	60	.92	150	112	.62